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Wetlands Delineation at American Chemical
Services Hazardous Waste Site,
Griffith, Indiana. IAG-DW14934313-0

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Table of Contents

List of Figures	i
List of Tables	ii
Summary	1
Introduction	2
Objectives	2
Methods	2
Results and Discussion.	10
Wetland I	
Wetland II	
Natural Resources	13
Additional Wetlands	16
Endangered Species	16
Conclusion	19
Literature Cited	20
Appendices	21
I	21
II	22

List of Figures

Page

Figure 1.	National Wetland Inventory map in the vicinity of the ACS site, Griffith, Indiana. USGS Highland Quadrangle	3
Figure 2.	U. S. Soil Conservation Survey-Lake County. Plate Number 21	5
Figure 3.	Preliminary wetland boundaries transcribed from 1984 aerial photograph	6
Figure 4.	Representative observation areas for vegetation sampling	8
Figure 5.	Wetland designations at the ACS site, Griffith, Indiana	12
Figure 6.	Approximate locations and classifications of additional wetlands located near the ACS site, east across Colfax Avenue, Griffith, Indiana	18

List of Tables

Page

Table 1.	Typical Profiles for Maumee loamy fine sand (hydric) and Plainfield fine sand (non-hydric) in Lake County, Indiana	7
Table 2.	Results of the technical criteria test for 21 representative observation areas at the ACS site, Griffith, Indiana	11
Table 3.	List of vegetation species collected on April 10-11, 1990 at the ACS site, Griffith, Indiana	14
Table 4.	List of Wildlife species observed utilizing the wetland habitats at the ACS site, Griffith, Indiana. April 10-11, 1990	17

Summary

At the request of the U.S. Environmental Protection Agency, Region V, the U.S. Fish and Wildlife Service conducted a wetlands delineation for site wetlands potentially impacted by contaminants originating at the American Chemical Services (ACS) hazardous waste site.

Office review and field surveying indicated numerous wetlands exist at the ACS site, many of which are not identified on the National Wetland Inventory. The diversity of wetland types present provide habitat for a variety of wildlife species.

INTRODUCTION

The American Chemical Services (ACS) Superfund site is located in Griffith, Indiana on the outskirts of the city's southeast side. The site was placed on the National Priorities List in 1983 as a result of investigations into chemical disposal practices on the site. ACS operates as a chemical/solvent recovery facility, which also has a limited chemical manufacturing operation. During the course of its operations, ACS dumped and otherwise disposed of unrecoverable solvents on the property, in addition to transporting waste to the adjacent Griffith City Landfill. Kapica Drum, Inc. also allegedly disposed of drum-cleaning residues on ACS property. These 3 sites total 52 acres and jointly comprise the official ACS site.

The National Wetland Inventory (Figure 1) indicates numerous and extensive wetlands within a 1-mile radius of the ACS site to the southwest, south, southeast, east, and northeast. There is an extensive wetland complex adjacent to the northwest boundary of the site. These wetlands are dissected and bordered by the Grand Trunk Western Railroad lines, the Chesapeake and Ohio Railroad lines, and the abandoned Erie-Lackawanna Railroad lines. The wetlands to the north of the Grand Trunk Western lines were not within the project boundary limits, however, they are likely hydraulically connected. The NWI map classifies this wetland complex as palustrine, emergent, semi-permanent/palustrine emergent, seasonally flooded. The entire complex is approximately 78 acres, however, only 50.5 acres were included in the present delineation.

OBJECTIVES

The objectives of this project were:

1. To ground-truth and verify wetlands delineated on the National Wetland Inventory maps.
2. To identify other wetland areas not included in the National Wetland Inventory.
3. To identify dominant vegetation in the various wetland areas.
4. To assess relative value of the various wetland habitats for fish and wildlife resources.

METHODS

The methods utilized in this delineation are outlined in the Federal Manual for Identifying and Delineating Jurisdictional Wetlands (1989). Because of the relative homogeneity of the site, the soils assessment procedure was selected. Prior to the field work, an office review was conducted to preliminarily outline the area in question. Due to the unavailability of the most recent aerial photographs the preliminary boundaries were outlined from a 1984 photograph, obtained from the EPA project manager. Based upon the field inspection, the 1984 photograph was accurate with the exception of approximately 5 additional acres lost to the Griffith Landfill operation.

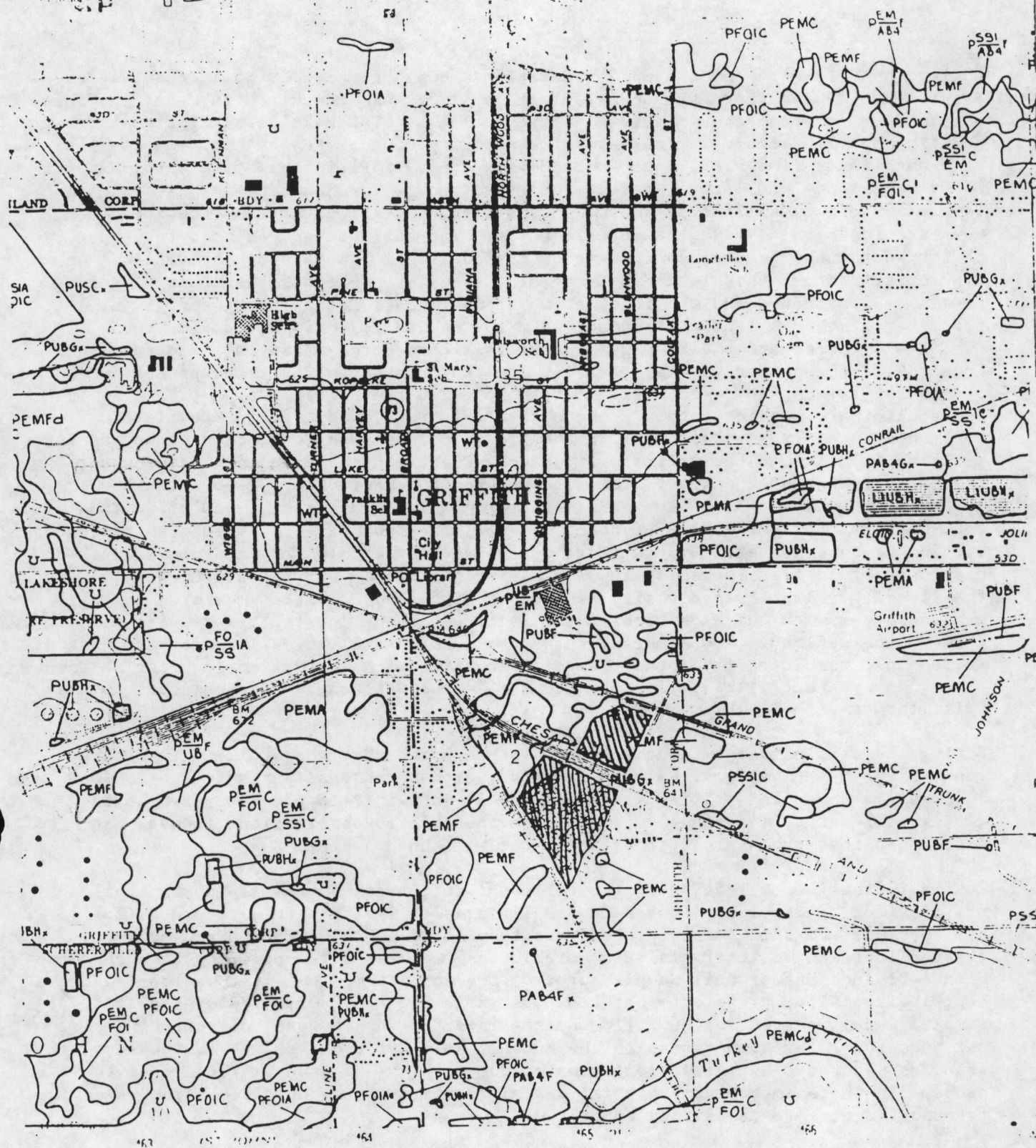


FIGURE 1. National Wetland Inventory map in the vicinity of the American Chemical Service site, Griffith, Indiana. USGS Highland Quadrangle. Cross-hatched area is ACS.

During the office review and map preparation a copy of the U.S. Soil Conservation Service Soil Survey for Lake County, Indiana (1972) was consulted to determine the presence or absence, and locations of hydric soils. The Lake County Indiana Survey sheet number 21 (Figure 2) indicates the majority of the area in question consists of Maumee loamy fine sand, interspersed with areas of Plainfield fine sand, Watseka loamy fine sand, and a small section of Tawas muck. The Maumee loamy fine sand and Tawas muck are classified by the U.S. Department of Agriculture and the Soil Conservation Service (1986) as hydric soils. The soil survey was used to compare soil types to the general configuration of the visual boundary of the wetlands on the aerial photograph. To avoid damaging the aerial photograph, a clear plastic overlay was attached and the information transcribed. Points along the visual perimeter of the wetland that coincided with the hydric soils boundaries were randomly selected and their compass bearings recorded to assist in field location. Location of the points were arbitrarily located from 88 to 282 feet apart based upon a scale of 1 inch (in) = 25 millimeters (mm) = 220 feet (ft), 1 mm = 8.8 ft. The preliminary map generated in the office (Figure 3) was used in the field reconnaissance flagging effort. In the field, point A was located on ground by its position relative to the railroad track embankment and the tree row in the upper northwest corner of the study area. Based upon the preliminary map, point B was located with the use of a Suunto MC-1 mirror compass and was measured off with a tape measure 220 feet S 66 E of point A. All other points were located and measured off in the same manner. Orange flags were placed at each point, and pink flags were placed every 55 feet to assist in maintaining the proper bearing alignment. During the flagging reconnaissance visit, no sign of disturbed conditions existed in the wetland areas with the exception of the railroad embankments that were placed through the wetlands, and minor disturbances such as small clearings for groundwater wells etc., resulting from other remedial investigation activities occurring at the site. An apparent illegal fill had occurred in the wetland located adjacent to the Griffith City Landfill.

During the reconnaissance flagging visit it was noted that the entire wetland area identified on the National Wetland Inventory either possessed standing water (up to 2.5 feet in some areas; 5 feet in the ditches), or water-logged saturated soils (water table at soil surface). Based upon these field observations it was determined that the hydrologic criteria for wetlands was met.

To aid in the identification of the different soil types in the field, the soil profiles for Maumee loamy fine sand and Plainfield fine sand were recorded (Table 1). Because the soil sample probes were taken to a depth of 18 inches, only the first 3 incremented intervals were noted. Soil samples were collected at each point with a 21 inch Hoffer Soil Sampler probe. Due to extreme inclement weather, and the strikingly obvious difference between the hydric and non-hydric soils, the soil samples were observed in the field and the lowest 3 inches were collected in whirl-pak bags for later comparisons to the Munsell Soil Color charts. Areas possessing standing water did not yield soil samples due to wash-out upon extraction of the probe. In these instances the whirl-pak bag containing the point location tags were transported back to the office empty.

Representative observation areas (Figure 4) were selected based upon several factors. In addition to selecting areas that met the hydric soil criterion, representative observation areas that had apparent characteristics, but were not identified on the National Wetland Inventory map were also chosen. The plant communities were characterized, and the percent areal cover of the dominant species

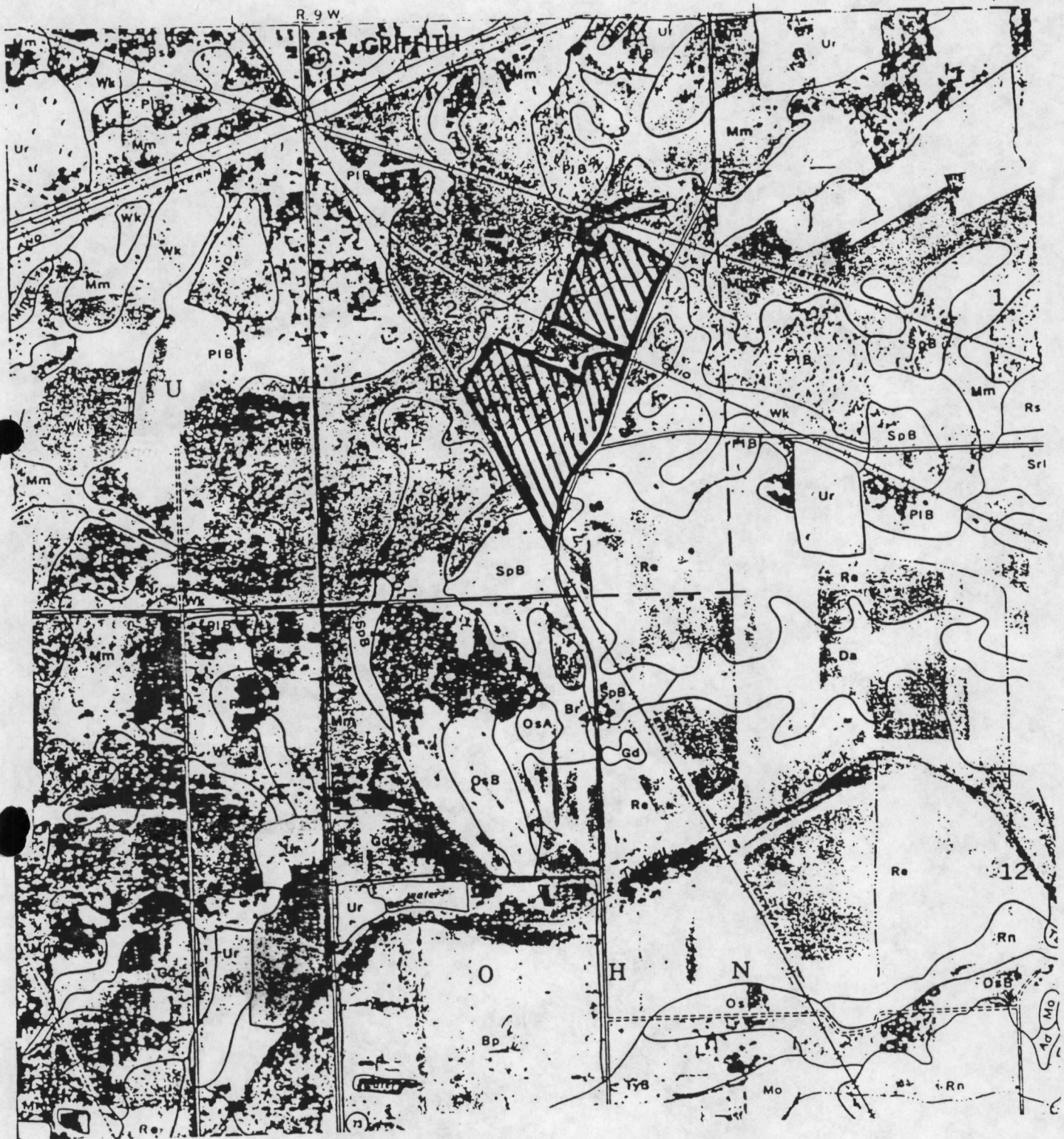


FIGURE 2. U.S. Soil Conservation Survey-Lake County. Plate number 21. Cross-hatched area is ACS. Shaded areas are hydric soils.

Table 1. Typical Profiles for Maumee loamy fine sand (Hydric) and Plainfield fine sand (Non-hydric) in Lake County, Indiana.

Maumee loamy fine sand			Plainfield fine sand		
Depth	Color	Munsell Notation	Depth	Color	Munsell Notation
-9 inches	Black	N 2/0	0-4 inches	Dark Grey	10 YR. 3/1
9-16 inches	Black	N 2/0	4-6 inches	Greyish brown	10 YR. 4/2
16-21 inches	Black	N 2/0	6-27 inches	Yellowish brown	10 YR. 5/4

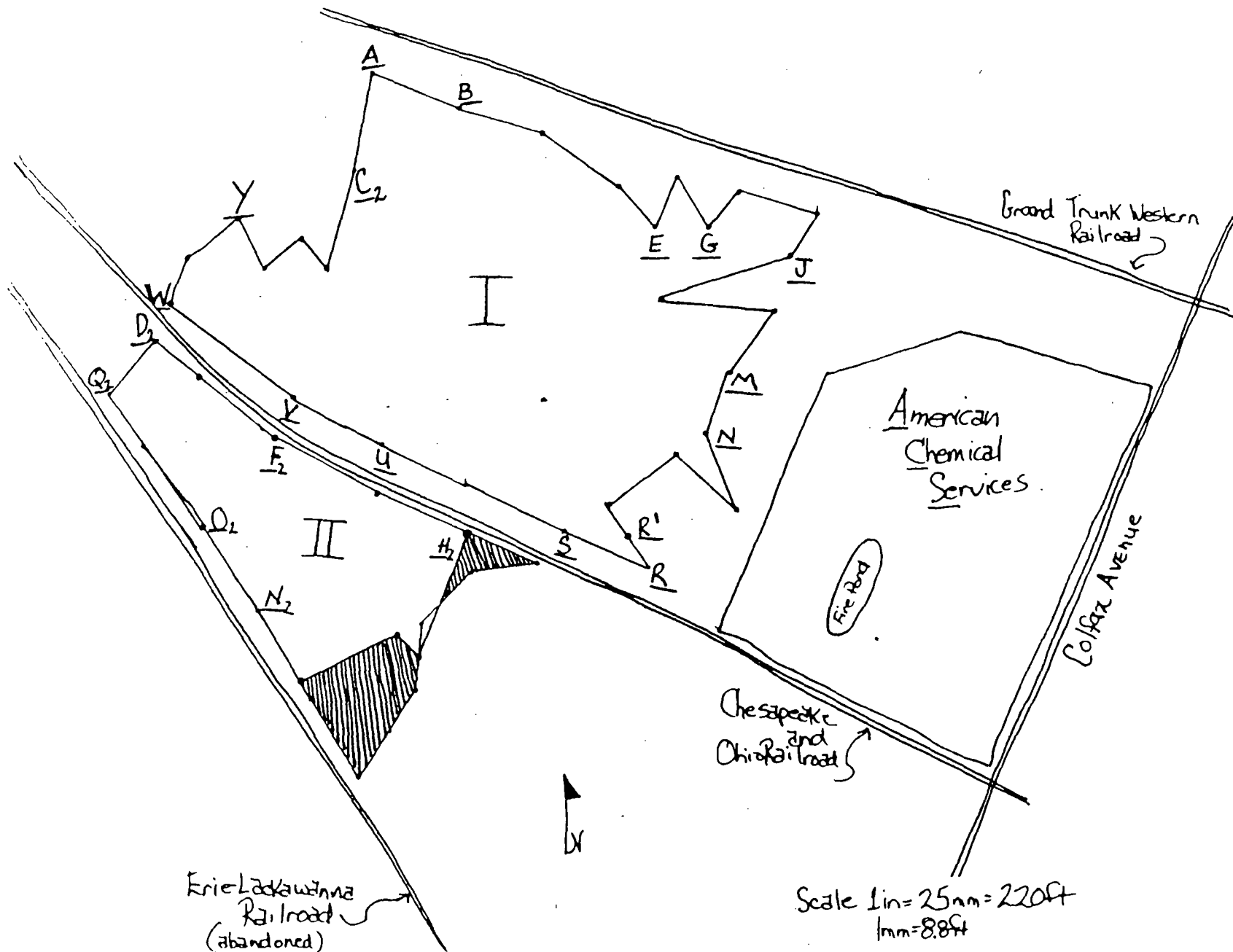


FIGURE 4. Representative observation areas for vegetation sampling. Cross-hatched area lost to landfill expansion.²⁰

in the communities were visually estimated. Samples of the dominant vegetation at each of the representative areas were collected in 8 gallon plastic bags and transported to the office for later identification. A list of references used is included in Appendix 1. Once the vegetation was identified the information was recorded on field data forms and the indicator status of the species was obtained from the National List of Plant Species that occur in Wetlands; Indiana (1988). A wetland determination was then made for each representative observation area based upon the 3 mandatory technical criteria; hydrophytic vegetation, hydric soils, and wetland hydrology, as outlined in the Federal Manual for Identifying and Delineating Jurisdictional Wetlands. The information obtained in the survey was used to prepare the final map of the site wetlands. It is important to note that no "additional" wetlands have been delineated in terms of acreage. This study has examined wetlands currently shown on the National Wetland Inventory map, and differentiated between the existing habitat types that are not delineated on the NWI within the original boundaries. The wetland boundaries indicated on Figures 5 and 6 were drawn based upon visual field observations of shifts in dominant vegetation. All soils within the peripheral boundaries are hydric.

RESULTS AND DISCUSSION

Of the 21 representative observation areas sampled, 12 met all 3 mandatory technical criteria for wetland determination (Table 2). Of the 9 areas that failed the mandatory technical criteria test, M, N, S, D₂, and H₂ lacked all 3 criteria; C₂ and Q₂ lacked hydrophytic vegetation criteria; R¹ lacked hydric soil and hydrology criteria, and F₂ lacked wetland hydrology and hydrophytic vegetation criterion.

Wetland I

Wetland I is bounded by the Grand Trunk Western Railroad, the American Chemical Services site, and the Chesapeake and Ohio Railroad. Based upon the results of the survey this area is more complex than the National Wetland Inventory (NWI) indicates (Figure 5). NWI shows this area as consisting of a large palustrine, emergent, semi-permanent mixed with seasonally flooded wetland. The NWI does not show any of the forested or scrub-shrub wetlands bordering the palustrine emergent area. Of the 15 representative observation areas selected for Wetland I, the 5 that did not meet the technical criteria for wetland determination were all transitional zones between the wetland-upland interface. Non-hydric soils were present at 4 of the 5 areas. All of the areas possessed hydrophytic vegetation, but the percentage of FACU and UPL exceeded the percentage of FACW and OBL species at each of the 5 areas except R¹. It should be noted that some species were collected at the various areas that did not have indicator category designations; these species were not located in either the state or national list of plant species found in wetlands. It is sophistic to automatically list species not included on the National Plant List as UPL species, however, based upon reviewers suggestions this has been done with the exception of 2 species of liverworts: Riccia fluitans and Ricciocarpus natans. These two species are bryophytes which are found in the water; it would be completely erroneous to list these as UPL species.

Wetland II

Wetland II is bounded by the Chesapeake and Ohio Railroad, the City of Griffith landfill, and the abandoned Erie-Lackawanna Railroad bed. Wetland II, according to the NWI is a palustrine, emergent, semi-permanent wetland. The various other habitat types surrounding it have been omitted from the official map.

This wetland area has been impacted due to past and present expansion of the City of Griffith Landfill. Approximately 5 acres of emergent/scrub-shrub/forested wetland on the north and southeast corners have been filled since the 1984 aerial photograph was taken. There is also a gravel road/turn-around that appeared to have been recently laid in the center of the palustrine, emergent, seasonally flooded wetland (Figure 5). This was probably an illegal fill; the U.S. Army Corps of Engineers has been notified.

There were 4 representative observation areas that did not meet the 3 technical criteria for wetland designation. However, 3 areas were placed along the railroad embankment, due to the location of a drainage ditch (approximately 5 feet deep) lying between the railroad tracks and the wetland area to the south of the ditch. Additional representative areas were not selected to replace areas not meeting the 3 mandatory criteria, any additional points along the railroad embankment would yield

Table 2. Results of the technical criteria test for 21 representative observation areas at the ACS site, Griffith, Indiana.

Area	Soil Series	Hydrophytic Vegetat	Hydric Soil		Wetland Hydrology		Wetland Determination	
		% OBL, FACW	Yes	No	Yes	No	Yes	No
A	Maumee loamy fine sand	71.0	X		X		X	
B	Maumee loamy fine sand	100.0	X		X		X	
E	Maumee loamy fine sand	66.7	X		X		X	
G	Maumee loamy fine sand	88.0	X		X		X	
J	Maumee loamy fine sand	100.0	X		X		X	
M	Plainfield fine sand	25.0		X		X		X
N	Plainfield fine sand	20.0		X		X		X
R ¹	Plainfield fine sand	50.0		X		X		X
R	Maumee loamy fine sand	66.0	X		X		X	
S	Plainfield fine sand	45.0		X		X		X
U	Maumee loamy fine sand	100.0	X		X		X	
V	Maumee loamy fine sand	100.0	X		X		X	
W	Maumee loamy fine sand	75.0	X		X		X	
Y	Maumee loamy fine sand	60.0	X		X		X	
C ₂	Maumee loamy fine sand	16.0	X		X			X
D ₂	Plainfield fine sand	14.0		X		X		X
F ₂	Maumee loamy fine sand	40.0	X			X		X
H ₂	Plainfield fine sand	25.0		X		X		X
N ₂	Maumee loamy fine sand	100.0	X		X		X	
O ₂	Maumee loamy fine sand	100.0	X		X		X	
Q ₂	Maumee loamy fine sand	25.0	X		X			X

the same results. Technically, the entire area would be classified wetlands if the railroad tracks and embankments did not exist. The 4th area lacked a predominance of hydrophytic vegetation.

NATURAL RESOURCES

This field investigation indicated that the natural resources and natural resource values of the wetland habitats are greater than originally suspected because of the diversity of habitat types present: emergent, scrub-shrub, and forested.

The vegetation of "marshes" is characterized by emergent aquatic plants growing in permanent to semi-permanent shallow water. Also present are species of shallow open water communities, as well as those found in sedge meadows and seasonally flooded basins. Marshes are among the most productive of all wetlands for waterbirds and furbearers, and can also provide spawning and nursery habitat for many species of fish. Birds that use marshes for breeding and feeding include ducks, geese, rails, herons, egrets, terns, and many songbirds. Raptors such as the osprey, bald eagle, and northern harrier frequent marshes in search of prey. Important furbearers inhabiting marshes include beaver, muskrat, and mink. Excellent winter habitat can be provided for upland wildlife, including ring-necked pheasant and eastern cottontail (Eggers and Reed 1987).

The emergent wetlands in the centers of wetland areas I and II are predominated by cattails. A list of species collected can be found in Table 3. Cattail stands provide important food and cover for wildlife. For example, the rhizomes are eaten by geese and muskrats. Muskrats also use the foliage to construct their lodges, which in turn can provide resting and nesting sites for waterbirds. Yellow-headed blackbirds, red-winged blackbirds, and marsh wrens build their nests in cattail vegetation. Wetland area I contains an open water area with a muskrat den and much activity in this area was apparent.

The transitional zones between the emergent areas and shrubby or forest areas support hydrophytic vegetation on saturated but not inundated soils. Plants occurring in these areas include species found in other communities, such as the annuals of seasonally flooded basins, emergent aquatics of marshes, and invading shrubs or trees, which are present as scattered, small individuals.

The transitional emergent zones are particularly important for their water quality functions. Wildlife habitat is provided for many species including sandhill crane, ring-necked pheasant, common snipe, sedge wren, small mammals, and white-tailed deer. The composites found in these areas are an important fall and winter food source for songbirds.

Scrub-shrub wetlands are plant communities dominated by woody vegetation less than 20 feet in height and with dbh's of less than 6 inches growing on saturated to seasonally flooded soils. They can be dominated by willows and/or red-osier, and sometimes silky (swamp) dogwood. These areas usually retain some of the forbs, grasses, and sedges of the transitional emergent zones. The vegetation in scrub-shrub wetlands possesses a variety of wildlife value. Willows are browsed by white-tail deer and eastern cottontails; red-osier dogwoods provide berries for song birds and ruffed grouse and are browsed by deer and rabbits; and elderberry also provides berries for songbirds and ruffed grouse.

Forested wetlands are dominated by mature conifers or lowland hardwood trees. They

Table 3. List of Vegetation Species collected on April 10-11, 1990 at the ACS site, Griffith, Indiana.

Scientific Name	Common Name	Indicator Category*
<u>Agrimonia parviflora</u>	Agrimony	FAC+
<u>A. pubescens</u>	Agrimony	UPL
<u>Ampelopsis arborea</u>	Peppervine	FACW
<u>Apocynum androsaemifolium</u>	Spreading dogbane	UPL
<u>Aronia arbutifolia</u>	Red chokeberry	FACW
<u>Betula allegheniensis</u>	Yellow birch	FAC
<u>Caltha palustris</u>	Marsh marigold	OBL
<u>C. litis occidentalis</u>	Hackberry	FAC-
<u>Cornus amomum</u>	Swamp dogwood	FACW+
<u>C. stolonifera</u>	Red-osier dogwood	FACW
<u>Corylus americana</u>	Hazelnut	FACU
<u>Cytisus scoparius</u>	Scotch broom	UPL
<u>Dipsacus sylvestris</u>	Teasel	FAC
<u>Fragaria virginiana</u>	Common Strawberry	FAC-
<u>Galium aparine</u>	Bedstraw	FACU
<u>Hamamelis virginiana</u>	Witch hazel	FACU
<u>Liquidambar styraciflua</u>	Sweet Gum	FACW
<u>Ludwigia glandulosa</u>	Ludwigia	OBL
<u>Lyriodendron tulipifera</u>	Tuliptree	FACU+
<u>Nyssa sylvatica</u>	Tupelo	FACW+
<u>Onoclea sensibilis</u>	Sensitive fern	FACW
<u>Populus deltoides</u>	Cottonwood	FAC+
<u>P. grandidentata</u>	Large-tooth Poplar	FACU
<u>P. tremoides</u>	Quaking Aspen	FAC
<u>Prunus pennsylvanica</u>	Pin cherry	FACU
<u>Pteris esculenta</u>	Braken fern	FACU
<u>Quercus alba</u>	White oak	FACU
<u>Q. bicolor</u>	Swamp white oak	FACW+
<u>Q. coccinea</u>	Scarlet oak	UPL
<u>Q. palustris</u>	Pin oak	FACW
<u>Q. rubra</u>	Northern red oak	FACU
<u>Q. velutina</u>	Black oak	UPL
<u>Rhus copellina</u>	Dwarf sumac	UPL
<u>Riccia fluitans</u>	Liverwort	NONE
<u>Ricciocarpus natans</u>	Liverwort	NONE
<u>Rosa carolina</u>	Wild rose	FACU-
<u>R. multiflora</u>	Multi-flora rose	FACU
<u>R. nitida</u>	Northeastern rose	UPL
<u>Rubus allegheniensis</u>	Highbush blackberry	FACU+
<u>R. canadensis</u>	Smooth blackberry	UPL
<u>R. hispidus</u>	Swamp dewberry	FACW
<u>R. villosa</u>	Low blackberry	UPL
<u>Salix discolor</u>	Pussy willow	FACW
<u>S. exigua</u>	Sandbar willow	OBL

Table 3. List of Vegetation Species (Con't).

Scientific Name	Common Name	Indicator Category
<u>Sambucus canadensis</u>	Elderberry	FACW-
<u>Solidago altissima</u>	Golden rod	FACU
<u>Sonchus arvensis</u>	Field sow-thistle	FAC-
<u>Spiraea alba</u>	Meadow sweet	FACW+
<u>S. latifolia</u>	Meadow sweet	FACW-
<u>Stenanthium gramineum</u>	Featherbells	FAC
<u>Thelypteris thelypteroides</u>	Marsh fern	FACW
<u>Typha angustifolia</u>	Narrow-leaf cattail	OBL
<u>T. latifolia</u>	Broad-leaf cattail	OBL
<u>Ulmus rubra</u>	Slippery elm	FAC
<u>Verbascum thaspus</u>	Wooly mullein	UPL
<u>Verbena urticifolia</u>	White vervain	FAC+
<u>Viburnum prunifolium</u>	Black haw	FACU
<u>Vitis aestivalis</u>	Summer grape	FACU
<u>V. vulpina</u>	Frost grape	FACW-
<u>Xanthorhiza simplissima</u>	Yellowroot	UPL

*Species with bold **UPL** indicator status are not listed in the state or national plant lists and have been assigned this status by default.

are important for stormwater and flood retention, and also provide habitat for white-tailed deer, furbearers, songbirds, ruffed grouse, barred owl, and amphibians. The various wetland habitats at the American Chemical Services site are being used by a variety of wildlife species, many of which were observed during the reconnaissance flagging visit, and the field survey visit (Table 4).

ADDITIONAL WETLANDS

At a meeting held by the U.S. EPA project manager on February 28, 1990, FWS was requested to observe the area immediately east of American Chemical Services, adjacent to Colfax Road to determine if wetlands were present. This area was walked during the field reconnaissance flagging visit, which revealed various wetlands, some of which were not indicated on the NWI maps (Figure 6). There is a palustrine, emergent, semi-permanent wetland approximately 7 acres in size about 0.1 mile east of Colfax Road, that is identified on the NWI map. The field check revealed that this wetland extends west and southward within 20-30 feet of the roadway. These wetlands would be classified as a combination palustrine, emergent/scrub-shrub forested area with water regimes ranging between temporary, saturated, seasonal, seasonal saturated, and semi-permanent.

A wetland delineation was not conducted for this area, however, the soil survey maps indicate that portions do contain hydric soils.

ENDANGERED SPECIES

The Highland area of Lake County is represented by many federal and state species of special emphasis/concern, in addition to several federal threatened and endangered species. An annotated list follows:

Fed E	Indiana bat	<u>Myotis sodalis</u>
Fed E	Peregrine falcon	(<u>Falco peregrinus</u>) *Migratory
Fed T	Pitchers thistle	(<u>Cirsium pitcheri</u>)
Sp EM/CN	Great blue heron	(<u>Ardea herodias</u>)
	American bittern	(<u>Botaurus lentiginosus</u>)
	Black tern	(<u>Chlidonias niger</u>)
	Least bittern	(<u>Ixobrychus exilis</u>)
	King rail	(<u>Rallus elegans</u>)
	Yellow-crowned night heron	(<u>Nycticorax violaceus</u>)
	Spotted turtle	(<u>Clemmys guttata</u>)
	Western smooth green snake	(<u>Opheodrys vernalis</u>)
	Franklin's ground squirrel	(<u>Spermophilus franklini</u>)
	Blanding's turtle	(<u>Emydoidea blandingi</u>)
	Bald eagle	(<u>Haliaeetus leucocephalus</u>) *Historical

This endangered species list constitutes informal consultation only, and is not intended to fulfill the requirement of Section 7 of the Endangered Species Act of 1973, as amended. If, after review of the Phase I Remedial Investigation report, it appears likely that any endangered species may have been/may be affected by this site, it may be necessary to initiate formal consultation. If as a result of further consultation, a "no effect" determination is made regarding endangered species, that determination should be revisited after 1 year for new information, or newly listed species.

Table 4. List of wildlife species observed utilizing the wetland habitats at the American Chemical Services site, Griffith, Indiana April 10-11, 1990.

Scientific Name	Common Name
BIRDS	
<u>Agelaius phoeniceus</u>	Red-winged blackbirds (many)
<u>Aix sponsa</u>	Wood ducks (1 pair)
<u>Anas platyrhynchos</u>	Mallard ducks (2 pairs)
<u>Branta canadensis</u>	Canada geese (1 pair)
<u>Charadrius vociferus</u>	Killdeer (1)
<u>Corvus brachyrhynchos</u>	Common crows (many)
<u>Dendrocopos pubescens</u>	Downy woodpeckers (2)
<u>D. villosa</u>	Hairy woodpeckers (1)
<u>Larus spp.</u>	Gulls (many)
<u>Phasianus colchicus</u>	Ring-necked pheasant (1 male)
<u>Regulus satrapa</u>	Golden-crown kinglets (2)
<u>Richmondia cardinalis</u>	Cardinals (3)
<u>Spinus tristis</u>	American goldfinches (1 pair)
MAMMALS	
<u>Procyon lotor</u>	Raccoon (tracks)
<u>Odocoileus virginianus</u>	White-tailed deer (tracks)
<u>Ondatra zibethicus</u>	Muskrats (3) & den
<u>Sylvilagus floridanus</u>	Eastern cottontails (4)

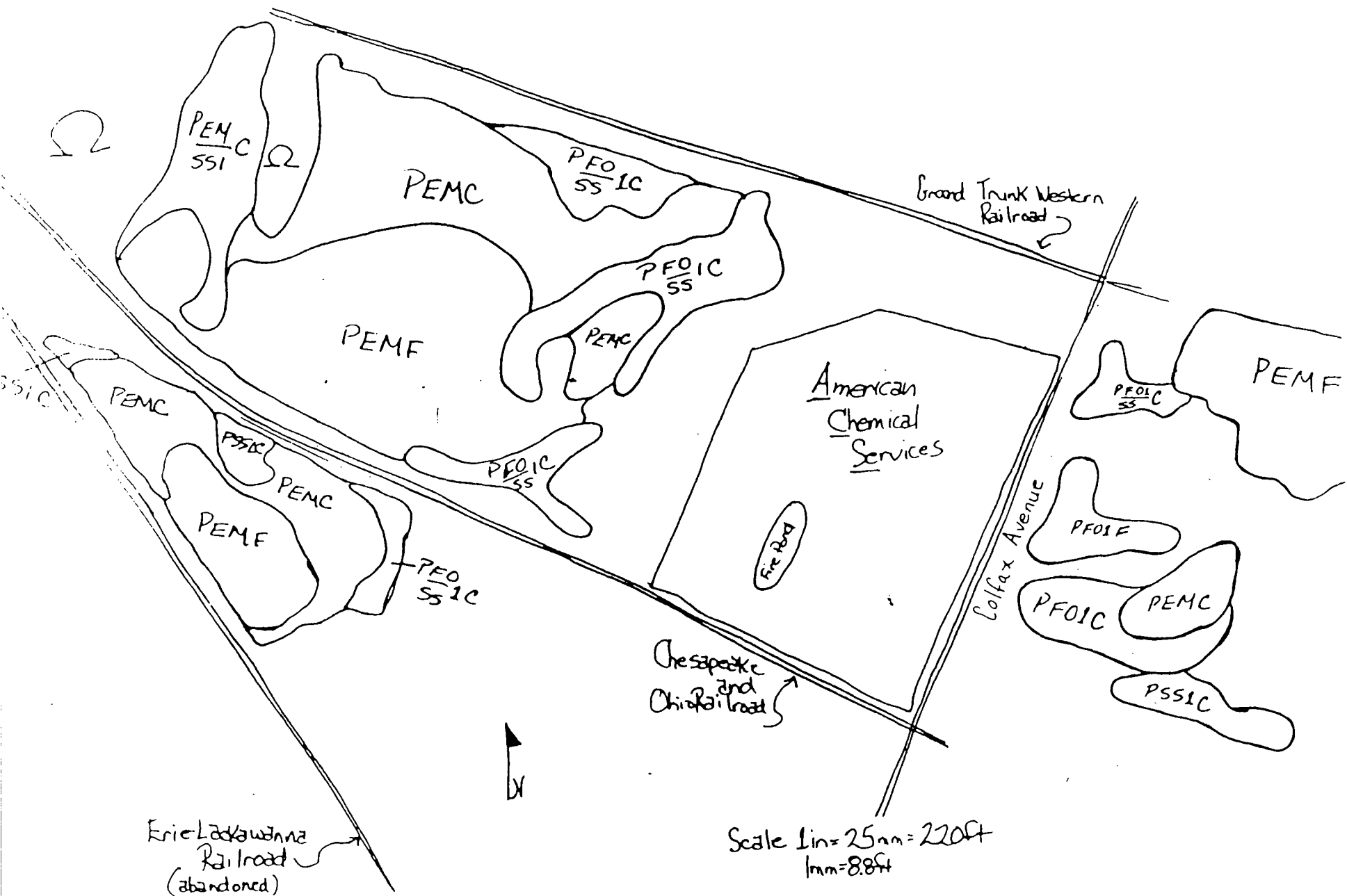


FIGURE 6. Approximate locations and classifications of additional wetlands located near the ACS site, east across Colfax Avenue, Griffith, Indiana.

CONCLUSIONS

1. Wetlands identified on the NWI do exist at the American Chemical Services site.
2. There are wetlands present at the site that are not identified on the NWI. These wetlands consist of palustrine, forested, and scrub-shrub transitional zones between the NWI-identified emergent wetland and upland areas.
3. The wetlands present at the site provide habitat diversity for a variety of wildlife species.
4. The wetlands present on the site possess potential habitat for federal threatened and endangered species, state and federal species of special concern/emphasis, and other birds protected by the Migratory Bird Treaty Act.

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APPENDIX 1

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APPENDIX 2
Field Data Forms

**DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹**

Field Investigator(s): R. NIMS / A. Fullmer Date: April 11, 1990
 Project/Site: AGS State: IN County: LAKE
 Applicant/Owner: EPA Plant Community #/Name: A
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?

Yes ☒ No ☐ (If no, explain on back)

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes ☐ No ☒ (If yes, explain on back)

VEGETATION

Dominant Plant Species		Indicator	Dominant Plant Species		Indicator
Status	Stratum		Status	Stratum	
1. <u>Quercus Alba</u>		<u>FACW</u>	11. _____		
2. <u>Quercus Velutina</u>		<u>None</u>	12. _____		
3. <u>Cornus Amomum</u>		<u>FACW+</u>	13. _____		
4. <u>Sagittaria</u>		<u>FACW+</u>	14. _____		
5. <u>Cardinalis</u>		<u>FACW</u>	15. _____		
6. <u>Lupinus sylvestris</u>		<u>FACW (Not)</u>	16. _____		
7. <u>Quercus palustris</u>		<u>FACW</u>	17. _____		
8. <u>Yucca</u>		<u>FAC+</u>	18. _____		
9. <u>Asplenium platyneuron</u>		<u>FAC+</u>	19. _____		
10. _____			20. _____		

Percent of dominant species that are OBL, FACW, and/or FAC 87.5%

Is the hydrophytic vegetation criterion met? Yes ☒ No ☐

Rationale: _____

yes

SOILS

Series/phase: Udalf / Typic Hapludalf Subgroup: 2

Is the soil on the hydric soils list? Yes ☒ No ☐ Undetermined ☐

Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☐ No ☐

Is the soil: Mottled? Yes ☐ No ☒ Gleyed? Yes ☐ No ☐

Matrix Color: N2/O Black Mottle Colors: _____

Other hydric soil indicators: Saturated

Is the hydric soil criterion met? Yes ☒ No ☐

Rationale: It meets the criteria requirements.

yes

HYDROLOGY

Is the ground surface inundated? Yes ☐ No ☒ Surface water depth: _____

Is the soil saturated? Yes ☒ No ☐

Depth to free-standing water in pit/soil probe hole: _____

List other field evidence of surface inundation or soil saturation: _____

yes

Is the wetland hydrology criterion met? Yes ☒ No ☐

Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes ☐ No ☐

Rationale for jurisdictional decision: _____

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

² Classification according to "Soil Taxonomy."

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹

Field Investigator(s): R. Nims, K. Fulmer Date: _____
 Project/Site: ACS State: IN County: LAKE
 Applicant/Owner: EPA Plant Community #/Name: B
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
 Yes _____ No _____ (If no, explain on back)
 Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes _____ No _____ (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. <u>Typha latifolia</u>	<u>OBL</u>		11. _____		
2. <u>Vitis vulpina</u>	<u>FACW</u>		12. _____		
3. <u>Sagittaria arifolia</u>	<u>FACW</u>		13. _____		
4. <u>Sagittaria arifolia</u>	<u>FAC</u>		14. _____		
5. _____			15. _____		
6. _____			16. _____		
7. _____			17. _____		
8. _____			18. _____		
9. _____			19. _____		
10. _____			20. _____		

Percent of dominant species that are OBL, FACW, and/or FAC 100%
 Is the hydrophytic vegetation criterion met? Yes ☒ No _____
 Rationale: _____

SOILS

Series/phase: Maumee loamy fine sand Subgroup: Typic Hapludalf
 Is the soil on the hydric soils list? Yes ☒ No _____ Undetermined _____
 Is the soil a Histosol? Yes _____ No ☒ Histia epipedon present? Yes _____ No ☒
 Is the soil: Mottled? Yes _____ No ☒ Gleyed? Yes _____ No _____
 Matrix Color: N 2/0 Black Mottle Colors: _____
 Other hydric soil indicators: wet
 Is the hydric soil criterion met? Yes ☒ No _____
 Rationale: meets chroma criteria

HYDROLOGY

Is the ground surface inundated? Yes ☒ No _____ Surface water depth: ~ 10 inches
 Is the soil saturated? Yes _____ No _____
 Depth to free-standing water in pit/soil probe hole: _____
 List other field evidence of surface inundation or soil saturation: _____
 Is the wetland hydrology criterion met? Yes ☒ No _____
 Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes _____ No _____
 Rationale for jurisdictional decision: _____

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

² Classification according to "Soil Taxonomy."

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹

Field Investigator(s): R. Nims Date: _____
 Project/Site: ACS State: IN County: LAKE
 Applicant/Owner: EPA Plant Community #/Name: E
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook

Do normal environmental conditions exist at the plant community?
 Yes ☒ No _____ (If no, explain on back)
 Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes ☒ No _____ (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. <u>Populus deltoides</u>	<u>FAC+</u>	_____	11. _____	_____	_____
2. <u>Populus villosa (low bktory)</u>	<u>Aone</u>	_____	12. _____	_____	_____
3. <u>Cornus amomorum</u>	<u>FACW</u>	_____	13. _____	_____	_____
4. <u>Salix exigua</u>	<u>FACW</u>	_____	14. _____	_____	_____
5. <u>Fragaria virginiana</u>	<u>FAC-</u>	_____	15. _____	_____	_____
6. <u>Nyssa sylvatica</u>	<u>FACW (not)</u>	_____	16. _____	_____	_____
7. <u>Lycopersicon esculentum</u>	<u>FACUr</u>	_____	17. _____	_____	_____
8. <u>Sedge spp</u>	<u>?</u>	_____	18. _____	_____	_____
9. _____	_____	_____	19. _____	_____	_____
10. _____	_____	_____	20. _____	_____	_____

Percent of dominant species that are OBL, FACW, and/or FAC 85.7%
 Is the hydrophytic vegetation criterion met? Yes ☒ No _____
 Rationale: _____

SOILS

Series/phase: Mauvee loamy fine sand Subgroup: Typic Haploquods
 Is the soil on the hydric soils list? Yes ☒ No _____ Undetermined _____
 Is the soil a Histosol? Yes _____ No ☒ Histic epipedon present? Yes _____ No _____
 Is the soil: Mottled? Yes _____ No ☒ Gleyed? Yes _____ No _____
 Matrix Color: N 2/0 Black Mottle Colors: _____
 Other hydric soil indicators: wet
 Is the hydric soil criterion met? Yes ☒ No _____
 Rationale: meets chroma criteria

HYDROLOGY

Is the ground surface inundated? Yes _____ No ☒ Surface water depth: _____
 Is the soil saturated? Yes ☒ No _____
 Depth to free-standing water in pit/soil probe hole: _____
 List other field evidence of surface inundation or soil saturation: _____
 Is the wetland hydrology criterion met? Yes ☒ No _____
 Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes _____ No _____
 Rationale for jurisdictional decision: _____

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.
² Classification according to "Soil Taxonomy."

**DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹**

Field Investigator(s): R. Nims Date: _____
 Project/Site: ACS State: IN County: LAVE
 Applicant/Owner: EPA Plant Community #/Name: J
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
 Yes ☒ No _____ (If no, explain on back)
 Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes _____ No ☒ (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. <u>Carex communis</u>	<u>FACW</u>		11. _____		
2. <u>Sagittaria</u>	<u>OBL</u>		12. _____		
3. <u>Utricularia</u>	<u>FAC</u>		13. _____		
4. <u>Sedge spp.</u>	<u>?</u>		14. _____		
5. <u>Onoclea sensibilis</u>	<u>FACW</u>		15. _____		
6. <u>Fraxinus virginiana</u>	<u>FAC</u>		16. _____		
7. _____			17. _____		
8. _____			18. _____		
9. _____			19. _____		
10. _____			20. _____		

Percent of dominant species that are OBL, FACW, and/or FAC 100%
 Is the hydrophytic vegetation criterion met? Yes ☒ No _____
 Rationale: _____

SOILS

Series/phase: Mauwec loamy fine sand Subgroup: Typic Haplaquods
 Is the soil on the hydric soils list? Yes ☒ No _____ Undetermined _____
 Is the soil a Histosol? Yes _____ No ☒ Histic epipedon present? Yes _____ No _____
 Is the soil: Mottled? Yes _____ No ☒ Gleyed? Yes _____ No ☒
 Matrix Color: 10YR 2/1 Black Mottle Colors: _____
 Other hydric soil indicators: _____
 Is the hydric soil criterion met? Yes ☒ No _____
 Rationale: meets chroma criteria

HYDROLOGY

Is the ground surface inundated? Yes ☒ No _____ Surface water depth: ~ 5 inches
 Is the soil saturated? Yes ☒ No _____
 Depth to free-standing water in pit/soil probe hole: _____
 List other field evidence of surface inundation or soil saturation: _____
 Is the wetland hydrology criterion met? Yes ☒ No _____
 Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes _____ No _____
 Rationale for jurisdictional decision: _____

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

² Classification according to "Soil Taxonomy."

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹

Field Investigator(s): R. Nims Date: _____
 Project/Site: ACS State: IN County: LAKE
 Applicant/Owner: EPA Plant Community #/Name: M
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
 Yes _____ No _____ (If no, explain on back)
 Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes _____ No _____ (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. <u>Quercus alba</u>	<u>FACU</u>	_____	11. _____	_____	_____
2. <u>Quercus coccinea</u>	<u>None</u>	_____	12. _____	_____	_____
3. _____	_____	_____	13. _____	_____	_____
4. <u>A. alternifolius</u>	<u>FAC</u>	_____	14. _____	_____	_____
5. <u>Cornus racemosa</u>	<u>FAC</u>	_____	15. _____	_____	_____
6. <u>Vitis aestivalis</u>	<u>FACU</u>	_____	16. _____	_____	_____
7. <u>Spiraea alba</u>	<u>FACW</u>	_____	17. _____	_____	_____
8. _____	_____	_____	18. _____	_____	_____
9. _____	_____	_____	19. _____	_____	_____
10. _____	_____	_____	20. _____	_____	_____

Percent of dominant species that are OBL, FACW, and/or FAC 60%
 Is the hydrophytic vegetation criterion met? Yes ☒ No _____
 Rationale: _____

SOILS

Series/phase: Plainfield fine sand Subgroup: 2 Typic Udipsomments
 Is the soil on the hydric soils list? Yes _____ No ☒ Undetermined _____
 Is the soil a Histosol? Yes _____ No ☒ Histic epipedon present? Yes _____ No _____
 Is the soil: Mottled? Yes _____ No _____ Gleyed? Yes _____ No _____
 Matrix Color: 10 YR 3/3 Dark brown Mottle Colors: _____
 Other hydric soil indicators: _____
 Is the hydric soil criterion met? Yes _____ No ☒
 Rationale: _____

HYDROLOGY

Is the ground surface inundated? Yes _____ No ☒ Surface water depth: _____
 Is the soil saturated? Yes _____ No ☒
 Depth to free-standing water in pit/soil probe hole: _____
 List other field evidence of surface inundation or soil saturation: _____
 Is the wetland hydrology criterion met? Yes _____ No ☒
 Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes _____ No _____
 Rationale for jurisdictional decision: _____

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

² Classification according to "Soil Taxonomy."

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹

Field Investigator(s): R Nims Date: _____
 Project Site: ACS State: IN County: LAKE
 Applicant/Owner: EPA Plant Community #/Name: N
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
 Yes ☒ No _____ (If no, explain on back)
 Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes _____ No _____ (If yes, explain on back)

VEGETATION

Dominant Plant Species			Dominant Plant Species		
	Indicator	Stratum		Indicator	Stratum
1. <u>Quercus alba</u>	<u>FACU</u>		11. _____		
2. <u>Quercus coccinea</u>	<u>none</u>		12. _____		
3. <u>Ludwigia glandulosa</u>	<u>obl</u>		13. _____		
4. <u>Potamogeton nodosus</u>	<u>FAC</u>		14. _____		
5. <u>Equisetum arvense</u>	<u>FACU</u>		15. _____		
6. <u>Potamogeton nodosus</u>	<u>FACU</u>		16. _____		
7. _____			17. _____		
8. _____			18. _____		
9. _____			19. _____		
10. _____			20. _____		

Percent of dominant species that are OBL, FACW, and/or FAC 40%
 Is the hydrophytic vegetation criterion met? Yes _____ No ☒
 Rationale: _____

SOILS

Series/phase: Plainfield fine sand Subgroup: Typic Udipsammments
 Is the soil on the hydric soils list? Yes _____ No ☒ Undetermined _____
 Is the soil a Histosol? Yes _____ No ☒ Histic epipedon present? Yes _____ No _____
 Is the soil: Mottled? Yes _____ No _____ Gleyed? Yes _____ No _____
 Matrix Color: 7.5YR 4/6 strong brown Mottle Colors: _____
 Other hydric soil indicators: _____
 Is the hydric soil criterion met? Yes _____ No ☒
 Rationale: _____

HYDROLOGY

Is the ground surface inundated? Yes _____ No ☒ Surface water depth: _____
 Is the soil saturated? Yes _____ No ☒
 Depth to free-standing water in pit/soil probe hole: _____
 List other field evidence of surface inundation or soil saturation: _____
 Is the wetland hydrology criterion met? Yes _____ No ☒
 Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes _____ No _____
 Rationale for jurisdictional decision: _____

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure

² Classification according to "Soil Taxonomy."

**DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹**

Field Investigator(s): R. Nims Date: _____
 Project/Site: ACS State: IN County: LAKE
 Applicant/Owner: EPA Plant Community #/Name: R1
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
 Yes ☒ No _____ (If no, explain on back)
 Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes _____ No ☒ (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. <u>Populus deltoides</u>	<u>FAC+</u>		11. <u>Fraxinus nigra</u>	<u>FAC-</u>	<u>Common Stratum</u>
2. <u>Prunus pennsylvanica</u>	<u>FACU-</u>		12. _____		
3. <u>Salix exigua</u>			13. _____		
4. <u>Cornus stolonifera</u>	<u>FACW</u>		14. _____		
5. <u>Impatiens arifolia</u>	<u>none</u>		15. _____		
6. <u>Rosa carolina</u>	<u>FACU-</u>		16. _____		
7. <u>Asimina pulchra</u>	<u>none</u>		17. _____		
8. <u>Adiantum punctatum</u>	<u>FAC+</u>		18. _____		
9. <u>Galium aparine</u>	<u>FACU</u>		19. _____		
10. <u>Sambucus canadensis</u>	<u>FACU-</u>		20. _____		

Percent of dominant species that are OBL, FACW, and/or FAC 62.5%
 Is the hydrophytic vegetation criterion met? Yes _____ No ☒
 Rationale: _____

SOILS

Series/phase: Plainfield fine sand Subgroup: Typic Udipsammits
 Is the soil on the hydric soils list? Yes _____ No ☒ Undetermined _____
 Is the soil a Histosol? Yes _____ No ☒ Histic epipedon present? Yes _____ No _____
 Is the soil: Mottled? Yes _____ No _____ Gleyed? Yes _____ No _____
 Matrix Color: 10 YR 4/4 dark yellowish brown Mottle Colors: _____
 Other hydric soil indicators: _____
 Is the hydric soil criterion met? Yes _____ No ☒
 Rationale: _____

HYDROLOGY

Is the ground surface inundated? Yes _____ No ☒ Surface water depth: _____
 Is the soil saturated? Yes _____ No ☒
 Depth to free-standing water in pit/soil probe hole: _____
 List other field evidence of surface inundation or soil saturation: _____
 Is the wetland hydrology criterion met? Yes _____ No _____
 Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes _____ No _____
 Rationale for jurisdictional decision: _____

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

² Classification according to "Soil Taxonomy."

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹

Field Investigator(s): R. Nims Date: _____
 Project/Site: ACS State: IN County: LAKE
 Applicant/Owner: EPA Plant Community #/Name: R
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
 Yes _____ No _____ (If no, explain on back)
 Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes _____ No _____ (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. <u>Populus deltoides</u>	<u>FACW</u>		11. _____		
2. <u>P. grandidentata</u>	<u>FACW</u>		12. _____		
3. <u>Salix nigra</u>	<u>OBL</u>		13. _____		
4. <u>Cornus stolonifera</u>	<u>FACW</u>		14. _____		
5. <u>Sambucus canadensis</u>	<u>FACW</u>		15. _____		
6. <u>Oxalis sensibilis</u>	<u>FACW</u>		16. _____		
7. <u>Ludwigia glandulosa</u>	<u>OBL</u>		17. _____		
8. <u>Galium aparine</u>	<u>FACW</u>		18. _____		
9. <u>Cypripedium</u>	<u>none</u>		19. _____		
10. <u>Rubus hispidus</u>	<u>FACW</u>		20. _____		

Percent of dominant species that are OBL, FACW, and/or FAC 77%
 Is the hydrophytic vegetation criterion met? Yes ☒ No _____
 Rationale: _____

SOILS

Series/phase: Mauwice loamy fine sand Subgroup: Typic Haplaquolls
 Is the soil on the hydric soils list? Yes ☒ No _____ Uncertained _____
 Is the soil a Histosol? Yes _____ No ☒ Histic epipedon present? Yes _____ No _____
 Is the soil: Mottled? Yes _____ No ☒ Gleyed? Yes _____ No ☒
 Matrix Color: 10YR 3/1 very dark gray Mottle Colors: _____
 Other hydric soil indicators: _____
 Is the hydric soil criterion met? Yes ☒ No _____
 Rationale: meets criteria

HYDROLOGY

Is the ground surface inundated? Yes _____ No ☒ Surface water depth: _____
 Is the soil saturated? Yes ☒ No _____
 Depth to free-standing water in pit/soil probe hole: _____
 List other field evidence of surface inundation or soil saturation: _____
 Is the wetland hydrology criterion met? Yes _____ No _____
 Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes _____ No _____
 Rationale for jurisdictional decision: _____

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.
² Classification according to "Soil Taxonomy."

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹

Field Investigator(s): R. Nims Date: _____
 Project/Site: ACS State: IN County: LAKE
 Applicant/Owner: EPA Plant Community #/Name: 9
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
 Yes ☒ No ☐ (If no, explain on back)
 Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes ☒ No ☐ (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. <u>Populus tremuloides</u>	<u>FAC</u>		11. <u>Sagittaria arifolia</u>	<u>none</u>	
2. <u>Quercus palustris</u>	<u>FACW</u>		12. <u>Verbasum thlaspi</u>	<u>none</u>	<u>(RR)</u>
3. <u>Q. coccinea</u>	<u>none</u>		13. <u>Tragopogon virginicus</u>	<u>FAC</u>	
4. <u>A. velutina</u>	<u>none</u>		14. _____		
5. <u>Rhus copallina</u>	<u>none</u>		15. _____		
6. <u>Cornus stolonifera</u>	<u>FACW</u>		16. _____		
7. <u>Aronia arbutifolia</u>	<u>none</u>		17. _____		
8. <u>Salix nigra</u>	<u>obl</u>		18. _____		
9. <u>Onoclea sensibilis</u>	<u>FACW</u>		19. _____		
10. <u>Pteris caudata</u>	<u>none</u>		20. _____		

Percent of dominant species that are OBL, FACW, and/or FAC 100%
 Is the hydrophytic vegetation criterion met? Yes ☐ No ☐
 Rationale: _____

SOILS

Series/phase: Plainfield fine sand Subgroup: Type Ud, ps, 1s
 Is the soil on the hydric soils list? Yes ☐ No ☒ Undetermined ☐
 Is the soil a Histosol? Yes ☐ No ☐ Histic epipedon present? Yes ☐ No ☐
 Is the soil: Mottled? Yes ☐ No ☐ Gleyed? Yes ☐ No ☐
 Matrix Color: 10YR 5/8 Mottle Colors: _____
 Other hydric soil indicators: _____
 Is the hydric soil criterion met? Yes ☐ No ☒
 Rationale: _____

HYDROLOGY

Is the ground surface inundated? Yes ☐ No ☒ Surface water depth: _____
 Is the soil saturated? Yes ☐ No ☒
 Depth to free-standing water in pit/soil probe hole: _____
 List other field evidence of surface inundation or soil saturation: _____
 Is the wetland hydrology criterion met? Yes ☐ No ☐
 Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes ☐ No ☐
 Rationale for jurisdictional decision: _____

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

² Classification according to "Soil Taxonomy."

**DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹**

Field Investigator(s): R Nims Date: _____
 Project/Site: ACS State: IN County: LAKE
 Applicant/Owner: EPA Plant Community #/Name: 4
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
 Yes _____ No _____ (If no, explain on back)
 Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes _____ No _____ (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. <u>P. pericarpus natans</u>	<u>none</u>		11. _____		
2. <u>Regeria fluitans</u>	<u>none</u>		12. _____		
3. <u>Galium aparine</u>	<u>FACU</u>		13. <u>(on railroad embankment)</u>		
4. <u>Typha latifolia</u>	<u>obl</u>		14. _____		
5. _____			15. _____		
6. _____			16. _____		
7. _____			17. _____		
8. _____			18. _____		
9. _____			19. _____		
10. _____			20. _____		

Percent of dominant species that are OBL, FACW, and/or FAC 100%
 Is the hydrophytic vegetation criterion met? Yes ☒ No _____
 Rationale: _____

SOILS

Series/phase: Mauve leamy fine sand Subgroup: Typic Haploquolls
 Is the soil on the hydric soils list? Yes ☒ No _____ Undetermined _____
 Is the soil a Histosol? Yes _____ No ☒ Histic epipedon present? Yes _____ No _____
 Is the soil: Mottled? Yes _____ No ☒ Gleyed? Yes _____ No ☒
 Matrix Color: N 2/0 black Mottle Colors: _____
 Other hydric soil indicators: unable to get actual sample, in standing water
 Is the hydric soil criterion met? Yes ☒ No _____
 Rationale: meets chroma requirement

HYDROLOGY

Is the ground surface inundated? Yes ☒ No _____ Surface water depth: 6 in. - 12 inches
 Is the soil saturated? Yes ☒ No _____
 Depth to free-standing water in pit/soil probe hole: _____
 List other field evidence of surface inundation or soil saturation: _____
 Is the wetland hydrology criterion met? Yes ☒ No _____
 Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes _____ No _____
 Rationale for jurisdictional decision: _____

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.
² Classification according to "Soil Taxonomy."

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹

Field Investigator(s): R. Nims Date: _____
 Project Site: ACS State: IN County: LAKE
 Applicant/Owner: EPA Plant Community #/Name: V
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
 Yes _____ No _____ (If no, explain on back)
 Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes _____ No _____ (If yes, explain on back)

VEGETATION

Indicator			Indicator		
Dominant Plant Species	Status	Stratum	Dominant Plant Species	Status	Stratum
1. <u>Typha angustifolia</u>	<u>bb1</u>		11. _____		
2. _____			12. _____		
3. _____			13. _____		
4. _____			14. _____		
5. _____			15. _____		
6. _____			16. _____		
7. _____			17. _____		
8. _____			18. _____		
9. _____			19. _____		
10. _____			20. _____		

Percent of dominant species that are OBL, FACW, and/or FAC 100%
 Is the hydrophytic vegetation criterion met? Yes ☒ No _____
 Rationale: _____

SOILS

Series/phase: Mauumee loamy fine sand Subgroup: Typic Haplaquolls
 Is the soil on the hydric soils list? Yes ☒ No _____ Undetermined _____
 Is the soil a Histosol? Yes _____ No ☒ Histic epipedon present? Yes _____ No _____
 Is the soil: Mottled? Yes _____ No ☒ Gleyed? Yes _____ No ☒
 Matrix Color: N 2/0 black Mottle Colors: _____
 Other hydric soil indicators: under water
 Is the hydric soil criterion met? Yes _____ No _____
 Rationale: meet chroma criteria

HYDROLOGY

Is the ground surface inundated? Yes ☒ No _____ Surface water depth: 6-15 inches
 Is the soil saturated? Yes _____ No _____
 Depth to free-standing water in pit/soil probe hole: _____
 List other field evidence of surface inundation or soil saturation: _____
 Is the wetland hydrology criterion met? Yes ☒ No _____
 Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes _____ No _____
 Rationale for jurisdictional decision: _____

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

² Classification according to "Soil Taxonomy."

**DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹**

Field Investigator(s): R. Nims Date: _____
 Project/Site: ACS State: IN County: LAKE
 Applicant/Owner: EPA Plant Community #/Name: W
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
 Yes ☒ No _____ (If no, explain on back)
 Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes ☒ No _____ (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. <u>Gallium aparine</u>	<u>FACU</u>		11. _____		
2. <u>Thelypteris Thelypteroides</u>	<u>FACW</u>		12. _____		
3. <u>Onoclea sensibilis</u>	<u>FACW</u>		13. _____		
4. <u>Sagittaria angustifolia</u>	<u>Obl</u>		14. _____		
5. <u>Salix discolor</u>	<u>Obl</u>		15. _____		
6. <u>Cornus amomum</u>	<u>FACW</u>		16. _____		
7. <u>Apocynum androsaemifolium</u>	<u>non</u>		17. _____		
8. <u>Sagittaria angustifolia</u>			18. _____		
9. <u>Sagittaria angustifolia</u>	<u>non</u>		19. _____		
10. _____			20. _____		

Percent of dominant species that are OBL, FACW, and/or FAC 83.3%

Is the hydrophytic vegetation criterion met? Yes ☒ No _____

Rationale: _____

SOILS

Series/phase: Holocene loessial sand Subgroup: hyaline, platy, etc.

Is the soil on the hydric soils list? Yes ☒ No _____ Undetermined _____

Is the soil a Histosol? Yes _____ No ☒ Histic epipedon present? Yes _____ No _____

Is the soil: Mottled? Yes _____ No ☒ Gleyed? Yes _____ No ☒

Matrix Color: N2/D Black Mottle Colors: _____

Other hydric soil indicators: Sampling point inundated

Is the hydric soil criterion met? Yes ☒ No _____

Rationale: meets all soil requirements

HYDROLOGY

Is the ground surface inundated? Yes ☒ No _____ Surface water depth: 6-8 inches

Is the soil saturated? Yes _____ No _____

Depth to free-standing water in pit/soil probe hole: _____

List other field evidence of surface inundation or soil saturation: _____

Is the wetland hydrology criterion met? Yes ☒ No _____

Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes _____ No _____

Rationale for jurisdictional decision: _____

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

² Classification according to "Soil Taxonomy"

**DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹**

Field Investigator(s): R. Nims Date: _____
 Project/Site: ACS State: IN County: LAKE
 Applicant/Owner: EPA Plant Community #/Name: Y
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
 Yes _____ No _____ (If no, explain on back)
 Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes _____ No _____ (If yes, explain on back)

VEGETATION

Sandbar willow
white oak
Tamarack
Red maple
Yellow pine
Red pine
Rough leaf
hickory
Elderberry
Red pine

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. <u>Salix sp.</u>	<u>Obl</u>		11. <u>Rosa blanda</u>	<u>Obl</u>	
2. <u>Quercus velutina</u>	<u>FACW</u>		12. <u>Hamamelis virginica</u>	<u>FACW</u>	
3. <u>Prunus pennsylvanica</u>	<u>FACW</u>		13. _____		
4. <u>Quercus velutina</u>	<u>Obl</u>		14. _____		
5. <u>Betula alleghaniensis</u>	<u>FACW</u>		15. _____		
6. <u>Prunus pennsylvanica</u>	<u>FACW</u>		16. _____		
7. <u>Alnus incana</u>	<u>Obl</u>		17. _____		
8. <u>Sparganium angustifolium</u>	<u>Obl</u>		18. _____		
9. <u>Sagittaria arifolia</u>	<u>FACW</u>		19. _____		
10. <u>Carex stolonifera</u>	<u>FACW</u>		20. _____		

AC. Rose
wild

Percent of dominant species that are OBL, FACW, and/or FAC 79%
 Is the hydrophytic vegetation criterion met? Yes ☒ No _____
 Rationale: _____

SOILS

Series/phase: Mossy Lake Subgroup: Typic haplogloss
 Is the soil on the hydric soils list? Yes ☒ No _____ Undetermined _____
 Is the soil a Histosol? Yes _____ No ☒ Histic epipedon present? Yes _____ No _____
 Is the soil: Mottled? Yes _____ No ☒ Gleyed? Yes _____ No ☒
 Matrix Color: N2/O Black Mottle Colors: _____
 Other hydric soil indicators: _____
 Is the hydric soil criterion met? Yes ☒ No _____
 Rationale: sets criteria

HYDROLOGY

Is the ground surface inundated? Yes _____ No ☒ Surface water depth: _____
 Is the soil saturated? Yes ☒ No _____
 Depth to free-standing water in pit/soil probe hole: _____
 List other field evidence of surface inundation or soil saturation: _____
 Is the wetland hydrology criterion met? Yes _____ No _____
 Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes _____ No _____
 Rationale for jurisdictional decision: _____

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

² Classification according to "Soil Taxonomy."

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹

Field Investigator(s): R. Nims Date: _____
 Project/Site: AGS State: IN County: LAKE
 Applicant/Owner: EPA Plant Community #/Name: C2
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
 Yes ☒ No _____ (If no, explain on back)
 Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes _____ No ☒ (If yes, explain on back)

VEGETATION

Dominant Plant Species			Indicator			Dominant Plant Species			Indicator		
			Status	Stratum					Status	Stratum	
1. <u>Asplenium platyneuron</u>			<u>CH</u>			11. _____					
2. <u>Pteris esculenta</u>			<u>none</u>			12. _____					
3. <u>Polypodium virginicum</u>			<u>none</u>			13. _____					
4. <u>Quercus coccinea</u>			<u>none</u>			14. _____					
5. <u>Quercus rubra</u>			<u>FACU</u>			15. _____					
6. <u>Quercus rubra</u>			<u>FACU</u>			16. _____					
7. <u>Quercus rubra</u>			<u>FACU</u>			17. _____					
8. <u>Betula alleghaniensis</u>			<u>FACU</u>			18. _____					
9. _____						19. _____					
10. _____						20. _____					

Percent of dominant species that are OBL, FACW, and/or FAC 40%
 Is the hydrophytic vegetation criterion met? Yes _____ No _____
 Rationale: _____

NO

SOILS

Series/phase: Maunder Subgroup: 2 Typic haploquolls
 Is the soil on the hydric soils list? Yes ☒ No _____ Undetermined _____
 Is the soil a Histosol? Yes _____ No ☒ Histic epipedon present? Yes _____ No _____
 Is the soil: Mottled? Yes _____ No ☒ Gleyed? Yes _____ No ☒
 Matrix Color: N 2/0 Black Mottle Colors: _____
 Other hydric soil indicators: _____
 Is the hydric soil criterion met? Yes ☒ No _____
 Rationale: _____

HYDROLOGY

Is the ground surface inundated? Yes _____ No ☒ Surface water depth: _____
 Is the soil saturated? Yes ☒ No _____
 Depth to free-standing water in pit/soil probe hole: _____
 List other field evidence of surface inundation or soil saturation: _____
 Is the wetland hydrology criterion met? Yes ☒ No _____
 Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes _____ No _____
 Rationale for jurisdictional decision: _____

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

² Classification according to "Soil Taxonomy."

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹

Field Investigator(s): R. Nims Date: _____
 Project/Site: ACS State: IN County: LAKE
 Applicant/Owner: EPA Plant Community #/Name: D2
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
 Yes ☒ No _____ (If no, explain on back)
 Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes _____ No ☒ (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. <i>Quercus borealis</i>	none		11. _____		
2. <i>Quercus velutina</i>	none		12. _____		
3. <i>Populus deltoides</i>	FACW		13. _____		
4. <i>Hamamelis virginica</i>	FACW		14. _____		
5. <i>Stenacthium gramineum</i>	FAC		15. _____		
6. <i>Solidago altissima</i>	FACW		16. _____		
7. <i>Verbascum thapsus</i>	none		17. _____		
8. <i>V. aestivale</i>	FACW		18. _____		
9. <i>Calla palustris</i>	obl.		19. _____		
10. <i>Dipsacus sylvestris</i>	none		20. _____		

Percent of dominant species that are OBL, FACW, and/or FAC 50%

Is the hydrophytic vegetation criterion met? Yes ☒ No _____

Rationale: _____

SOILS

Series/phase: Fluvisol fine sand Subgroup: Typic Ustipsol
 Is the soil on the hydric soils list? Yes _____ No ☒ Undetermined _____
 Is the soil a Histosol? Yes _____ No _____ Histic epipedon present? Yes _____ No _____
 Is the soil: Mottled? Yes _____ No _____ Gleyed? Yes _____ No _____
 Matrix Color: 10YR 2/1 Mottle Colors: _____
 Other hydric soil indicators: _____
 Is the hydric soil criterion met? Yes _____ No ☒
 Rationale: Transected with boundary sample point at an abandoned railroad bed

HYDROLOGY

Is the ground surface inundated? Yes _____ No ☒ Surface water depth: _____
 Is the soil saturated? Yes _____ No ☒
 Depth to free-standing water in pit/soil probe hole: _____
 List other field evidence of surface inundation or soil saturation: _____

Is the wetland hydrology criterion met? Yes _____ No ☒

Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes _____ No _____

Rationale for jurisdictional decision: _____

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

² Classification according to "Soil Taxonomy."

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹

Field Investigator(s): R. Nims Date: _____
 Project/Site: ACS State: IN County: LAKE
 Applicant/Owner: EPA Plant Community #/Name: F2
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
 Yes ☒ No _____ (If no, explain on back)
 Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes _____ No ☒ (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. <u>Ludwigia glandulosa</u>	<u>Obl</u>		11. _____		
2. <u>Gallium aparinum</u>	<u>FACU</u>		12. _____		
3. <u>Rosa multiflora</u>	<u>FACU</u>		13. _____		
4. <u>Salix eriocha</u>	<u>FACU</u>		14. _____		
5. <u>Sorbus orochensis</u>	<u>FAC</u>		15. _____		
6. <u>Xanthoxylum simplicifolium</u>	<u>None</u>		16. _____		
7. _____			17. _____		
8. _____			18. _____		
9. _____			19. _____		
10. _____			20. _____		

Percent of dominant species that are OBL, FACW, and/or FAC 60%
 Is the hydrophytic vegetation criterion met? Yes ☒ No _____
 Rationale: _____

SOILS

Series/phase: Maumee loamy fine sand Subgroup: Typic Haplagudek
 Is the soil on the hydric soils list? Yes ☒ No _____ Undetermined _____
 Is the soil a Histosol? Yes _____ No ☒ Histic epipedon present? Yes _____ No _____
 Is the soil: Mottled? Yes _____ No ☒ Gleyed? Yes _____ No ☒
 Matrix Color: _____ Mottle Colors: _____
 Other hydric soil indicators: _____
 Is the hydric soil criterion met? Yes _____ No ☒
 Rationale: unable to obtain soil sample - sampling point on railroad embankment bordering ditch and P/EM/SS area

HYDROLOGY

Is the ground surface inundated? Yes _____ No ☒ Surface water depth: _____
 Is the soil saturated? Yes _____ No ☒
 Depth to free-standing water in pit/soil probe hole: _____
 List other field evidence of surface inundation or soil saturation: _____
 Is the wetland hydrology criterion met? Yes _____ No ☒
 Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes _____ No _____
 Rationale for jurisdictional decision: _____

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

² Classification according to "Soil Taxonomy."

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹

Field Investigator(s): P. Nims Date: _____
 Project/Site: ACS State: IN County: LAKE
 Applicant/Owner: EPA Plant Community #/Name: H2
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
 Yes ☒ No _____ (If no, explain on back)
 Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes _____ No ☒ (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. <u>Viburnum prunifolium</u>	<u>FACU</u>		11. _____		
2. <u>Rubus canadensis</u>			12. _____		
3. <u>Ludwigia glandulosa</u>	<u>abt</u>		13. _____		
4. <u>Sternanthus gramineus</u>	<u>FAC</u>		14. _____		
5. <u>Corylus americana</u>	<u>FACU</u>		15. _____		
6. <u>Sonchus asper</u>	<u>FAC-</u>		16. _____		
7. _____			17. _____		
8. _____			18. _____		
9. _____			19. _____		
10. _____			20. _____		

Percent of dominant species that are OBL, FACW, and/or FAC 40%
 Is the hydrophytic vegetation criterion met? Yes _____ No ☒
 Rationale: _____

SOILS

Series/phase: Planosol Subgroup: 2 Type: Unper ent
 Is the soil on the hydric soils list? Yes _____ No ☒ Undetermined _____
 Is the soil a Histosol? Yes _____ No ☒ Histic epipedon present? Yes _____ No _____
 Is the soil: Mottled? Yes _____ No ☒ Gleyed? Yes _____ No ☒
 Matrix Color: _____ Mottle Colors: _____
 Other hydric soil indicators: _____
 Is the hydric soil criterion met? Yes _____ No ☒
 Rationale: Unable to obtain soil sample - wetland boundary is at a ditch beside the railroad embankment, too many rocks

HYDROLOGY

Is the ground surface inundated? Yes _____ No ☒ Surface water depth: 4-5 feet
 Is the soil saturated? Yes _____ No ☒
 Depth to free-standing water in pit/soil probe hole: _____
 List other field evidence of surface inundation or soil saturation: _____
 Is the wetland hydrology criterion met? Yes _____ No ☒
 Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes _____ No ☒
 Rationale for jurisdictional decision: at least 2-3 feet SE is a ditch, but at some point, however

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

² Classification according to "Soil Taxonomy"

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹

Field Investigator(s) R. Nims Date _____
Project/Site ACS EPA State IN County LAKE
Applicant/Owner _____ Plant Community #/Name Q2
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?

Yes ☒ No _____ (If no, explain on back)

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes _____ No ☒ (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. <u>Galium aparinum</u>	<u>FACW</u>	11.			
2. <u>Onoclea sensibilis</u>	<u>ob</u>	12.			
3. <u>Solidago altissima</u>	<u>FACW</u>	13.			
4. <u>Dipsacis sylvestris</u>	<u>more</u>	14.			
5. <u>Populus tremuloides</u>	<u>FAC</u>	15.			
6. <u>Ulmus rubra</u>	<u>FAC</u>	16.			
7. _____		17.			
8. _____		18.			
9. _____		19.			
10. _____		20.			

Percent of dominant species that are OBL, FACW, and/or FAC 60%

Is the hydrophytic vegetation criterion met? Yes ☒ No _____

Rationale: _____

SOILS

Series/phase: Maumee loam fine sand Subgroup: Typic Haplogossils

Is the soil on the hydric soils list? Yes ☒ No _____ Undetermined _____

Is the soil a Histosol? Yes _____ No ☒ Histic epipedon present? Yes _____ No _____

Is the soil: Mottled? Yes _____ No ☒ Gleyed? Yes _____ No ☒

Matrix Color: N 2/0 Black Mottle Colors: _____

Other hydric soil indicators: _____

Is the hydric soil criterion met? Yes ☒ No _____

Rationale: no criteria requirements

HYDROLOGY

Is the ground surface inundated? Yes _____ No ☒ Surface water depth: _____

Is the soil saturated? Yes ☒ No _____

Depth to free-standing water in pit/soil probe hole: _____

List other field evidence of surface inundation or soil saturation: _____

Is the wetland hydrology criterion met? Yes ☒ No _____

Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes _____ No _____

Rationale for jurisdictional decision: _____

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

² Classification according to "Soil Taxonomy".

**DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹**

Field Investigator(s): R. Nims Date: _____
 Project/Site: ACS EPA State: IN County: LAKE
 Applicant/Owner: _____ Plant Community #/Name: N₂
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
 Yes _____ No _____ (If no, explain on back)
 Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes _____ No _____ (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. <u>Populus tremuloides</u>	<u>FAC</u>		11. _____		
2. <u>Cornus amomum</u>	<u>obl</u>		12. _____		
3. <u>Salix nigra</u>	<u>obl</u>		13. _____		
4. <u>Salix exigua</u>	<u>obl</u>		14. _____		
5. <u>Stenanthium gramineum</u>	<u>FAC</u>		15. _____		
6. <u>Vitis vulpina</u>			16. _____		
7. _____			17. _____		
8. _____			18. _____		
9. _____			19. _____		
10. _____			20. _____		

Percent of dominant species that are OBL, FACW, and/or FAC 100%
 Is the hydrophytic vegetation criterion met? Yes ☒ No _____
 Rationale: _____

SOILS

Series/phase: Maumee loamy fine sand Subgroup: 2 Typic Haplaquolls
 Is the soil on the hydric soils list? Yes ☒ No _____ Undetermined _____
 Is the soil a Histosol? Yes _____ No ☒ Histic epipedon present? Yes _____ No ☒
 Is the soil: Mottled? Yes _____ No ☒ Gleyed? Yes _____ No ☒
 Matrix Color: N 2/0 Mottle Colors: _____
 Other hydric soil indicators: _____
 Is the hydric soil criterion met? Yes ☒ No _____
 Rationale: unable to obtain sample - area inundated

HYDROLOGY

Is the ground surface inundated? Yes ☒ No _____ Surface water depth: 6-9 inches
 Is the soil saturated? Yes _____ No _____
 Depth to free-standing water in pit/soil probe hole: _____
 List other field evidence of surface inundation or soil saturation: _____

Is the wetland hydrology criterion met? Yes _____ No _____
 Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes _____ No _____
 Rationale for jurisdictional decision: _____

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

² Classification according to "Soil Taxonomy".



United States Department of the Interior

FISH AND WILDLIFE SERVICE
BLOOMINGTON FIELD OFFICE (ES)
718 North Walnut Street
Bloomington, Indiana 47401
(812)334-4261

IN REPLY REFER TO:

June 5, 1990

Mr. Robert Swale (5 HS-11)
U.S. Environmental Protection Agency
Office of Superfund
Waste Management Division
230 South Dearborn Street
Chicago, Illinois 60604

Dear Mr. Swale:

Enclosed is the Wetlands delineation report for the American Chemical Services site in Griffith, Indiana, performed under IAG-DW14934313-0.

If you have any questions regarding this report, please contact Robin Nims at FTS 332-4269.

Sincerely yours,

David C. Hudak
Supervisor

Wetlands Delineation at American Chemical
Services Hazardous Waste Site,
Griffith, Indiana. IAG-DW14934313-0

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Table of Contents

List of Figures	i
List of Tables	ii
Summary	1
Introduction	2
Objectives	2
Methods	2
Results and Discussion	9
Wetland I	
Wetland II	
Natural Resources	9
Additional Wetlands	16
Endangered Species	16
Conclusion	18
Literature Cited	19
Appendices	20
I	20
II	21

List of Figures

Page

Figure 1. National Wetland Inventory map in the vicinity of the ACS site, Griffith, Indiana. USGS Highland Quadrangle	3
Figure 2. Preliminary wetland boundaries transcribed from 1984 aerial photograph	5
Figure 3. U.S. Soil Conservation Survey-Lake County. Plate Number 21	6
Figure 4. Representative observation areas for vegetation sampling	8
Figure 5. Wetland designations at the ACS site, Griffith, Indiana	11
Figure 6. Approximate locations and classifications of additional wetlands located near the ACS site, east across Colfax Avenue, Griffith, Indiana	17

List of Tables

Page

Table 1.	Typical Profiles for Maumee loamy fine sand (hydric) and Plainfield fine sand (non-hydric) in Lake County, Indiana	7
Table 2.	Results of the technical criteria test for 21 representative observation areas at the ACS site, Griffith, Indiana	10
Table 3.	List of vegetation species collected on April 10-11, 1990 at the ACS site, Griffith, Indiana	13
Table 4.	List of Wildlife species observed utilizing the wetland habitats at the ACS site, Griffith, Indiana. April 10-11, 1990	15

Summary

At the request of the U.S. Environmental Protection Agency, Region V, the U.S. Fish and Wildlife Service conducted a wetlands delineation for site wetlands potentially impacted by contaminants originating at the American Chemical Services (ACS) hazardous waste site.

Office review and field surveying indicated numerous wetlands exist at the ACS site, many of which are not identified on the National Wetland Inventory. The diversity of wetland types present provide habitat for a variety of wildlife species.

INTRODUCTION

The American Chemical Services (ACS) Superfund site is located in Griffith, Indiana on the outskirts of the city's southeast side. The site was placed on the National Priorities List in 1987⁴ as a result of investigations into chemical disposal practices on the site. ACS operates as a chemical/solvent recovery facility, which also has a limited chemical manufacturing operation. During the course of its operations, ACS dumped and otherwise disposed of unrecoverable solvents on the property, in addition to transporting waste to the adjacent Griffith City Landfill. Kapica Drum, Inc. also allegedly disposed of drum-cleaning residues on ACS property. These 3 sites total 52 acres and jointly comprise the official ACS site.

The National Wetland Inventory (Figure 1) indicates numerous and extensive wetlands within a 1-mile radius of the ACS site to the southwest, south, southeast, east, and northeast. There is an extensive wetland complex adjacent to the northwest boundary of the site. These wetlands are dissected and bordered by the Grand Trunk Western Railroad lines, the Chesapeake and Ohio Railroad lines, and the abandoned Erie-Lackawanna Railroad lines. The wetlands to the north of the Grand Trunk Western lines were not within the project boundary limits, however, they are likely hydraulically connected. The NWI map classifies this wetland complex as palustrine, emergent, semi-permanent/plaustine emergent, seasonally flooded. The entire complex is approximately 78 acres, however, only 50.5 acres were included in the present delineation.

OBJECTIVES

The objectives of this project were:

1. To ground-truth and verify wetlands delineated on the National Wetland Inventory maps.
2. To identify other wetland areas not included in the National Wetland Inventory.
3. To identify dominant vegetation in the various wetland areas.
4. To assess relative value of the various wetland habitats for fish and wildlife resources.

METHODS

The methods utilized in this delineation are outlined in the Federal Manual for Identifying and Delineating Jurisdictional Wetlands (1989). Because of the relative homogeneity of the site, the soils assessment procedure was selected. Prior to the field work, an office review was conducted to preliminarily outline the area in question. Due to the unavailability of the most recent aerial photographs the preliminary boundaries were outlined from a 1984 photograph, obtained from the EPA project manager. Based upon the field inspection, the 1984 photograph was accurate with the exception of approximately 5 additional acres lost to the Griffith Landfill operation.

To transfer information from the aerial photograph, a clear plastic overlay was attached and the information transcribed. Points along the visual perimeter of the wetland were randomly selected and their compass bearings recorded to assist in field location. Location of the points followed the general contour of the visual perimeter and were arbitrarily located from 88 to 282 feet apart based upon a scale of 1 inch (in) = 25 millimeters (mm) = 220 feet (ft), 1 mm = 8.8 ft.

The preliminary map generated in the office (Figure 2) was used in the field reconnaissance flagging effort. In the field, point A was located on ground by its position relative to the railroad track embankment and the tree row in the upper northwest corner of the study area. Based upon the preliminary map, point B was located with the use of a Suunto MC-1 mirror compass and was measured off with a tape measure 220 feet S 66 E of point A. All other points were located and measured off in the same manner. Orange flags were placed at each point, and pink flags were placed every 55 feet to assist in maintaining the proper bearing alignment.

During the office review and map preparation a copy of the U.S. Soil Conservation Service Soil Survey for Lake County, Indiana (1972) was consulted to determine the presence or absence, and locations of hydric soils. The Lake County Indiana Survey sheet number 21 (Figure 3) indicates the majority of the area in question consists of Maumee loamy fine sand, interspersed with areas of Plainfield fine sand, Watseka loamy fine sand, and a small section of Tawas muck. The Maumee loamy fine sand and Tawas muck are classified by the U.S. Department of Agriculture and the Soil Conservation Service (1986) as hydric soils. To aid in the identification of the different soil types in the field, the soil profiles for Maumee loamy fine sand and Plainfield fine sand were recorded (Table 1). Because the soil sample probes were taken to a depth of 18 inches, only the first 3 incremented intervals were noted. Soil samples were collected at each point with a 21 inch Hoffer Soil Sampler probe. The soil samples were observed in the field and the lowest 3 inches were collected in whirl-pak bags for later comparisons to the Munsell Soil Color charts. Areas possessing standing water did not yield soil samples due to wash-out upon extraction of the probe. In these instances the whirl-pak bag containing the point location tags were transported back to the office empty.

Representative observation areas (Figure 4) were selected based upon several factors. In addition to selecting areas that met the hydric soil criterion, representative observation areas that had apparent characteristics, but were not identified on the National Wetland Inventory map were also chosen. The plant communities were characterized, and the percent areal cover of the dominant species in the communities were visually estimated. Samples of the dominant vegetation at each of the representative areas were collected in 8 gallon plastic bags and transported to the office for later identification. A list of references used is included in Appendix 1. Once the vegetation was identified the information was recorded on field data forms and the indicator status of the species was obtained from the National List of Plant Species that occur in Wetlands; Indiana (1988). A wetland determination was then made for each representative observation area based upon the 3 mandatory technical criteria; hydrophytic vegetation, hydric soils, and wetland hydrology, as outlined in the Federal Manual for Identifying and Delineating Jurisdictional Wetlands. The information obtained in the survey was used to prepare the final map of the site wetlands.

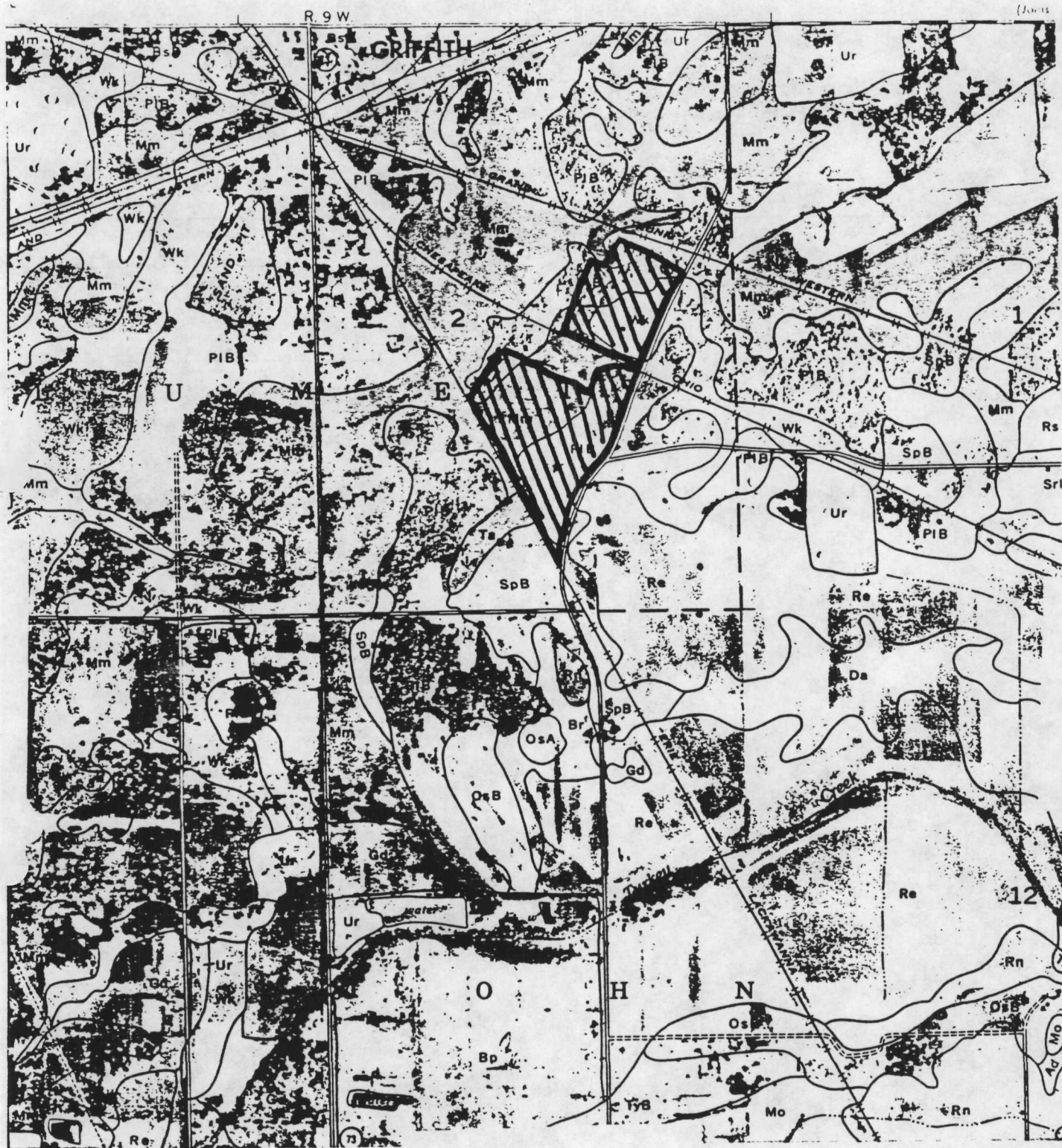


FIGURE 3. U.S. Soil Conservation Survey-Lake County. Plate number 21. Cross-hatched area is ACS. Shaded areas are hydric soils.

Table 1. Typical, Profiles for Maumee loamy fine sand (Hydric) and Plainfield fine sand (Non-hydric) in Lake County, Indiana.

Maumee loamy fine sand				Plainfield fine sand		
Depth		Color	Munsell Notation	Depth	Color	Munsell Notation
0-9 inches		Black	N 2/0	0-4 inches	Dark Grey	10 YR. 3/1
-16 inches		Black	N 2/0	4-6 inches	Greyish brown	10 YR. 4/2
16-21 inches		Black	N 2/0	6-27 inches	Yellowish brown	10 YR. 5/4

RESULTS AND DISCUSSION

Of the 21 representative observation areas sampled, 13 met all 3 mandatory technical criteria for wetland determination (Table 2). Of the 8 areas that failed the mandatory technical criteria test, N and H₂ lacked all 3 criteria; M, R, S, and D₂ lacked the hydric soils and wetland hydrology criteria; C₂ lacked hydrophytic vegetation criteria; and F₂ lacked wetland hydrology criterion.

Wetland I

Wetland I is bounded by the Grand Trunk Western Railroad, the American Chemical Services site, and the Chesapeake and Ohio Railroad. Based upon the results of the survey this area is more complex than the National Wetland Inventory (NWI) indicates (Figure 5). NWI shows this area as consisting of a large palustrine, emergent, semi-permanent mixed with seasonally flooded wetland. The NWI does not show any of the forested or scrub-shrub wetlands bordering the palustrine emergent area. Of the 5 representative observation areas that did not meet the technical criteria for wetland determination all were transitional zones between the wetland-upland interface because of the presence of non-hydric soils at 4 of the 5 areas. All of the areas possessed hydrophytic vegetation, but the percentage of FACU and UPL exceeded the percentage of FAC, FACW, and OBL species only at area N. It should be noted that some species were collected at the various areas that did not have indicator category designations; these species were not calculated into the percentages.

Wetland II

Wetland II is bounded by the Chesapeake and Ohio Railroad, the City of Griffith landfill, and the abandoned Erie-Lackawanna Railroad bed. Wetland II, according to the NWI is a palustrine, emergent, semi-permanent wetland. The various other habitat types surrounding it have been omitted from the official map.

This wetland area has been impacted due to past and present expansion of the City of Griffith Landfill. Approximately 5 acres of emergent/scrub-shrub/forested wetland on the north and southeast corners have been filled since the 1984 aerial photograph was taken. There is also a gravel road/turn-around that appeared to have been recently laid in the center of the palustrine, emergent, seasonally flooded wetland (Figure 5). This was probably an illegal fill; the U.S. Army Corps of Engineers has been notified.

There were 3 representative observation areas that did not meet the 3 technical criteria for wetland designation. These 3 areas, however, were placed along the railroad embankment, due to the location of a drainage ditch (approximately 5 feet deep) lying between the railroad tracks and the wetland area to the south of the ditch.

NATURAL RESOURCES

This field investigation indicated that the natural resources and natural resource values of the wetland habitats are greater than originally suspected because of the diversity of habitat types present: emergent, scrub-shrub, and forested.

Table 2. Results of the technical criteria test for 21 representative observation areas at the ACS site, Griffith, Indiana.

Area	Soil Series	Hydrophytic Vegetat % OBL, FACW, FAC	Hydric Soil		Wetland Hydrology		Wetland Determination	
			Yes	No	Yes	No	Yes	No
A	Maumee loamy fine sand	85.5	X		X		X	
B	Maumee loamy fine sand	100.0	X		X		X	
E	Maumee loamy fine sand	85.7	X		X		X	
G	Maumee loamy fine sand	88.0	X		X		X	
J	Maumee loamy fine sand	100.0	X		X		X	
M	Plainfield fine sand	60.0		X		X		X
N	Plainfield fine sand	40.0		X		X		X
R ¹	Plainfield fine sand	62.5		X		X		X
R	Maumee loamy fine sand	77.0	X		X		X	
S	Plainfield fine sand	100.0		X		X		X
U	Maumee loamy fine sand	100.0	X		X		X	
V	Maumee loamy fine sand	100.0	X		X		X	
W	Maumee loamy fine sand	83.3	X		X		X	
Y	Maumee loamy fine sand	77.0	X		X		X	
C ₂	Maumee loamy fine sand	40.0	X		X			X
D ₂	Plainfield fine sand	50.0		X		X		X
F ₂	Maumee loamy fine sand	60.0	X			X		X
H ₂	Plainfield fine sand	40.0		X		X		X
N ₂	Maumee loamy fine sand	100.0	X		X		X	
O ₂	Maumee loamy fine sand	100.0	X		X		X	
Q ₂	Maumee loamy fine sand	60.0	X		X		X	

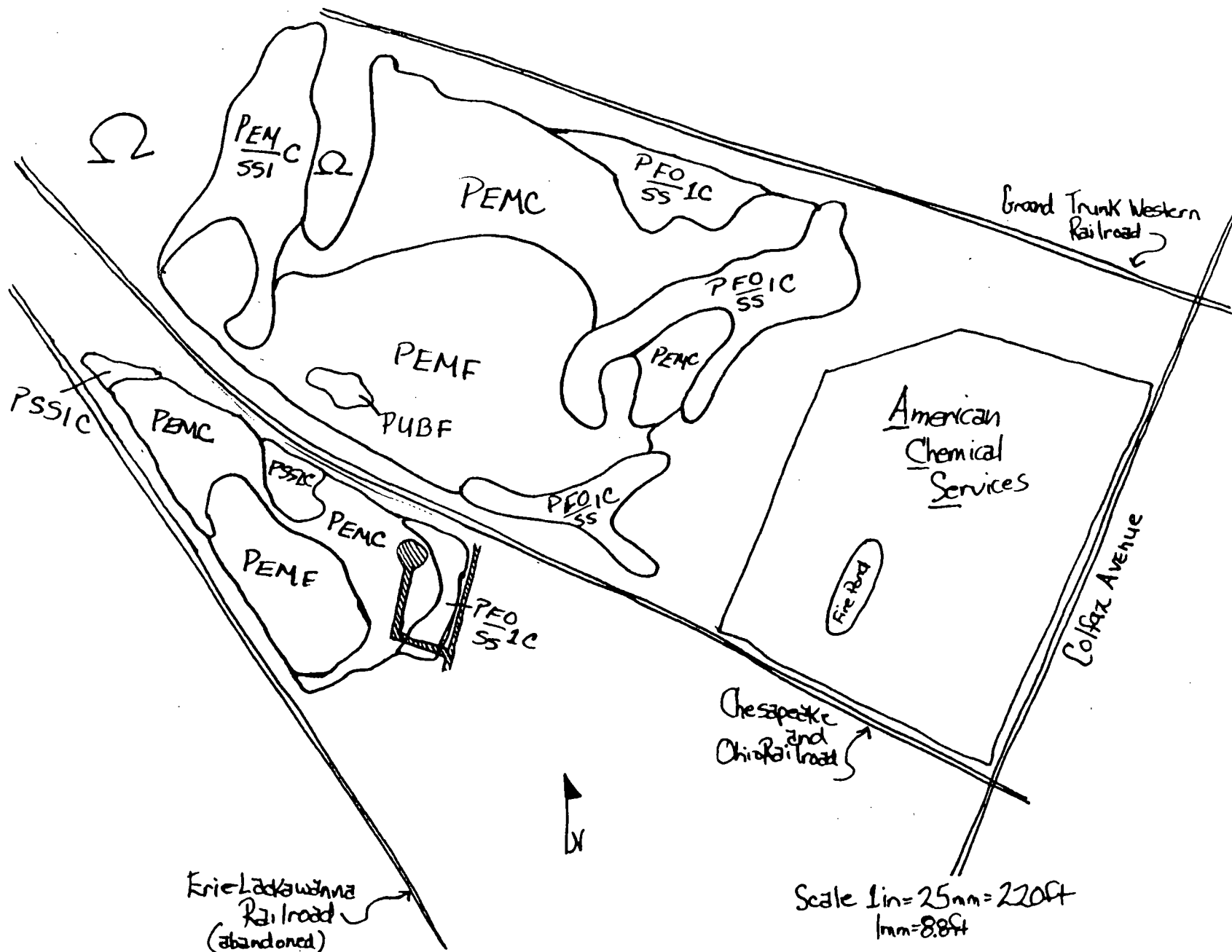


FIGURE 5. Wetland designations at the ACS site, Griffith, Indiana. Cross-hatched area is location of the illegal service road/turn-around fill.

The vegetation of "marshes" is characterized by emergent aquatic plants growing in permanent to semi-permanent shallow water. Also present are species of shallow open water communities, as well as those found in sedge meadows and seasonally flooded basins. Marshes are among the most productive of all wetlands for waterbirds and furbearers, and can also provide spawning and nursery habitat for many species of fish. Birds that use marshes for breeding and feeding include ducks, geese, rails, herons, egrets, terns, and many songbirds. Raptors such as the osprey, bald eagle, and northern harrier frequent marshes in search of prey. Important furbearers inhabiting marshes include beaver, muskrat, and mink. Excellent winter habitat can be provided for upland wildlife, including ring-necked pheasant and eastern cottontail (Eggers and Reed 1987).

The emergent wetlands in the centers of wetland areas I and II are predominated by cattails. A list of species collected can be found in Table 3. Cattail stands provide important food and cover for wildlife. For example, the rhizomes are eaten by geese and muskrats. Muskrats also use the foliage to construct their lodges, which in turn can provide resting and nesting sites for waterbirds. Yellow-headed blackbirds, red-winged blackbirds, and marsh wrens build their nests in cattail vegetation. Wetland area I contains an open water area with a muskrat den and much activity in this area was apparent.

The transitional zones between the emergent areas and shrubby or forest areas support hydrophytic vegetation on saturated but not inundated soils. Plants occurring in these areas include species found in other communities, such as the annuals of seasonally flooded basins, emergent aquatics of marshes, and invading shrubs or trees, which are present as scattered, small individuals.

The transitional emergent zones are particularly important for their water quality functions. Wildlife habitat is provided for many species including sandhill crane, ring-necked pheasant, common snipe, sedge wren, small mammals, and white-tailed deer. The composites found in these areas are an important fall and winter food source for songbirds.

Scrub-shrub wetlands are plant communities dominated by woody vegetation less than 20 feet in height and with dbh's of less than 6 inches growing on saturated to seasonally flooded soils. They can be dominated by willows and/or red-osier, and sometimes silky (swamp) dogwood. These areas usually retain some of the forbs, grasses, and sedges of the transitional emergent zones. The vegetation in scrub-shrub wetlands possesses a variety of wildlife value. Willows are browsed by white-tail deer and eastern cottontails; red-osier dogwoods provide berries for song birds and ruffed grouse and are browsed by deer and rabbits; and elderberry also provides berries for songbirds and ruffed grouse.

Forested wetlands are dominated by mature conifers or lowland hardwood trees. They are important for stormwater and flood retention, and also provide habitat for white-tailed deer, furbearers, songbirds, ruffed grouse, barred owl, and amphibians. The various wetland habitats at the American Chemical Services site are being used by a variety of wildlife species, many of which were observed during the reconnaissance flagging visit, and the field survey visit (Table 4).

ADDITIONAL WETLANDS

At a meeting held by the U.S. EPA project manager on February 28, 1990, FWS was requested to observe the area immediately east of American Chemical Services,

Table 3. List of Vegetation Species collected on April 10-11, 1990 at the ACS site, Griffith, Indiana.

Scientific Name	Common Name	Indicator Category
<u>Agrimonia parviflora</u>	Agrimony	FAC+
<u>A. pubescens</u>	Agrimony	None
<u>Ampelopsis arborea</u>	Peppervine	None
<u>Apocynum androsaemifolium</u>	Spreading dogbane	None
<u>Aronia arbutifolia</u>	Red chokeberry	None
<u>Betula allegheniensis</u>	Yellow birch	FAC
<u>Helianthus palustris</u>	Marsh marigold	OBL
<u>Rubus occidentalis</u>	Hackberry	FAC-
<u>Cornus amomum</u>	Swamp dogwood	FACW+
<u>C. stolonifera</u>	Red-osier dogwood	FACW
<u>Corylus americana</u>	Hazelnut	FACU
<u>Cytisus scoparius</u>	Scotch broom	None
<u>Dipsacus sylvestris</u>	Teasel	None
<u>Fragaria virginiana</u>	Common Strawberry	FAC
<u>Galium aparine</u>	Bedstraw	FACU
<u>Hamamelis virginiana</u>	Witch hazel	FACU
<u>Liquidambar styraciflua</u>	Sweet Gum	FACW
<u>Ludwigia glandulosa</u>	Ludwigia	OBL
<u>Lyriodendron tulipifera</u>	Tuliptree	FACU+
<u>Nyssa sylvatica</u>	Tupelo	FACW+
<u>Onoclea sensibilis</u>	Sensitive fern	FACW
<u>Populus deltoides</u>	Cottonwood	FAC+
<u>P. grandidentata</u>	Large-tooth Poplar	FACU
<u>P. tremoides</u>	Quaking Aspen	FAC
<u>Prunus pennsylvanica</u>	Pin cherry	FACU
<u>Pteris esculenta</u>	Bracken fern	FACU
<u>Quercus alba</u>	White oak	FACU
<u>Q. bicolor</u>	Swamp white oak	FACW+
<u>Q. coccinea</u>	Scarlet oak	None
<u>Q. palustris</u>	Pin oak	FACW
<u>Q. rubra</u>	Northern red oak	FACU
<u>Q. velutina</u>	Black oak	None
<u>Rhus copellina</u>	Dwarf sumac	None
<u>Riccia fluitans</u>	Liverwort	None
<u>Ricciocarpus natans</u>	Liverwort	None
<u>Rosa carolina</u>	Wild rose	FACU-
<u>R. multiflora</u>	Multi-flora rose	FACU
<u>R. nitida</u>	Northeastern rose	None
<u>Rubus allegheniensis</u>	Highbush blackberry	FACU+
<u>R. canadensis</u>	Smooth blackberry	None
<u>R. hispidus</u>	Swamp dewberry	FACW
<u>R. villosa</u>	Low blackberry	None
<u>Salix discolor</u>	Pussy willow	FACW
<u>S. exigua</u>	Sandbar willow	OBL

Table 3. List of Vegetation Species (Con't).

<u>Scientific Name</u>	<u>Common Name</u>	<u>Indicator Category</u>
<u>Sambucus canadensis</u>	Elderberry	FACW-
<u>Solidago altissima</u>	Golden rod	FACU
<u>Sonchus arvensis</u>	Field sow-thistle	FAC-
<u>Spiraea alba</u>	Meadow sweet	FACW+
<u>S. latifolia</u>	Meadow sweet	None
<u>Stenanthium gramineum</u>	Featherbells	FAC
<u>Thelypteris thelypteroides</u>	Marsh fern	FACW
<u>Typha angustifolia</u>	Narrow-leaf cattail	OBL
<u>latifolia</u>	Broad-leaf cattail	OBL
<u>Ulmus rubra</u>	Slippery elm	FAC
<u>Verbascum thaspus</u>	Woolly mullein	None
<u>Verbena urticifolia</u>	White vervain	FAC+
<u>Viburnum prunifolium</u>	Black haw	FACU
<u>Vitis aestivalis</u>	Summer grape	FACU
<u>V. vulpina</u>	Frost grape	FACW-
<u>Xanthorhiza simplissima</u>	Yellowroot	None

Table 4. List of wildlife species observed utilizing the wetland habitats at the American Chemical Services site, Griffith, Indiana April 10-11, 1990.

Scientific Name	Common Name
BIRDS	
<u>Agelaius phoeniceus</u>	Red-winged blackbirds (many)
<u>Aix sponsa</u>	Wood ducks (1 pair)
<u>Anas platyrhynchos</u>	Mallard ducks (2 pairs)
<u>Branta canadensis</u>	Canada geese (1 pair)
<u>Charadrius vociferus</u>	Killdeer (1)
<u>Corvus brachyrhynchos</u>	Common crows (many)
<u>Dendrocopos pubescens</u>	Downy woodpeckers (2)
<u>D. villosa</u>	Hairy woodpeckers (1)
<u>Larus spp.</u>	Gulls (many)
<u>Phasianus colchicus</u>	Ring-necked pheasant (1 male)
<u>Regulus satrapa</u>	Golden-crown kinglets (2)
<u>Richmondia cardinalis</u>	Cardinals (3)
<u>Spinus tristis</u>	American goldfinches (1 pair)
MAMMALS	
<u>Procyon lotor</u>	Raccoon (tracks)
<u>Odocoileus virginianus</u>	White-tailed deer (tracks)
<u>Ondatra zibethicus</u>	Muskrats (3) & den
<u>Sylvilagus floridanus</u>	Eastern cottontails (4)

adjacent to Colfax Road to determine if wetlands were present. This area was walked during the field reconnaissance flagging visit, which revealed various wetlands, some of which were not indicated on the NWI maps (Figure 6). There is a palustrine, emergent, semi-permanent wetland approximately 7 acres in size about 0.1 mile east of Colfax Road, that is identified on the NWI map. The field check revealed that this wetland extends west and southward within 20-30 feet of the roadway. These wetlands would be classified as a combination palustrine, emergent/scrub-shrub forested area with water regimes ranging between temporary, saturated, seasonal, seasonal saturated, and semi-permanent.

A wetland delineation was not conducted for this area, however, the soil survey maps indicate that portions do contain hydric soils.

ENDANGERED SPECIES

The Highland area of Lake County is represented by many federal and state species of special emphasis/concern, in addition to several federal threatened and endangered species. An annotated list follows:

Fed E	Indiana bat	<u>Myotis sodalis</u>
Fed E	Peregrine falcon	(<u>Falco peregrinus</u>) *Migratory
Fed T	Pitchers thistle	(<u>Cirsium pitcheri</u>)
Sp EM/CN	Great blue heron	(<u>Ardea herodias</u>)
	American bittern	(<u>Botaurus lentiginosus</u>)
	Black tern	(<u>Chlidonis niger</u>)
	Least bittern	(<u>Ixobrychus exilis</u>)
	King rail	(<u>Rallus elegans</u>)
	Yellow-crowned night heron	(<u>Nycticorax violaceous</u>)
	Spotted turtle	(<u>Clemmys guttata</u>)
	Western smooth green snake	(<u>Opheodrys vernalis</u>)
	Franklin's ground squirrel	(<u>Spermophilus franklini</u>)
	Blanding's turtle	(<u>Emydoidea blandingi</u>)
	Bald eagle	(<u>Haliaeetus leucocephalus</u>) *Historical

This endangered species list constitutes informal consultation only, and is not intended to fulfill the requirement of Section 7 of the Endangered Species Act of 1973, as amended. If, after review of the Phase I Remedial Investigation report, it appears likely that any endangered species may have been/may be affected by this site, it may be necessary to initiate formal consultation. If as a result of further consultation, a "no effect" determination is made regarding endangered species, that determination should be revisited after 1 year for new information, or newly listed species.

CONCLUSIONS

1. Wetlands identified on the NWI do exist at the American Chemical Services site.
2. There are wetlands present at the site that are not identified on the NWI. These wetlands consist of palustrine, forested, and scrub-shrub transitional zones between the NWI-identified emergent wetland and upland areas.

3. The wetlands present at the site provide habitat diversity for a variety of wildlife species.
4. The wetlands present on the site possess potential habitat for federal threatened and endangered species, state and federal species of special concern/emphasis, and other birds protected by the Migratory Bird Treaty Act.

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APPENDIX 1

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APPENDIX 2
Field Data Forms